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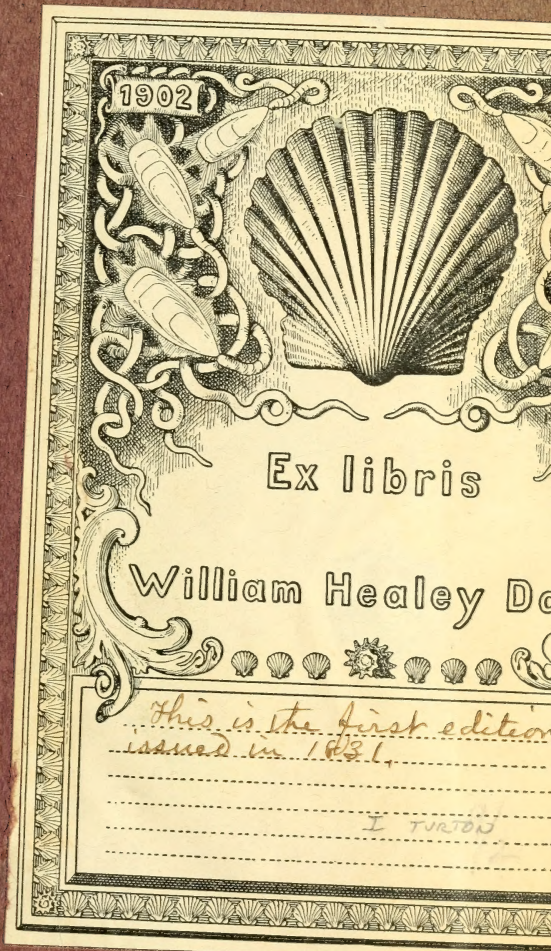
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MANUAL.

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Mollusks

A MANUAL

OF

THE LAND AND FRESH-WATER

SHELLS

OF

THE BRITISH ISLANDS,

ARRANGED ACCORDING TO THE MORE MODERN SYSTEMS OF CLASSIFICATION;

AND

DESCRIBED FROM PERFECT SPECIMENS IN THE AUTHOR'S CABINET:

WITH

COLOURED PLATES OF EVERY SPECIES.

BY W. TURTON, M.D.

Scire tuum nihil est nisi te scire hoc sciat alter.

LONDON:

PRINTED FOR

LONGMAN, REES, ORME, BROWN, AND GREEN,

PATERNOSTER-ROW.

1831.

Division of Mollusks

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TO

WILLIAM CLARK, Esq., *of Bath.*

My Dear Sir,

Notwithstanding the great advancements in most departments of Natural History, it must nevertheless be admitted, that in Conchology and the more minute portions of Zoology, our knowledge, in its enlarged consideration, is scarcely beyond its infancy.

Microscopic investigation, and the most patient inquiries, must therefore lend their fullest assistance: for till the animal has been dissected and accurately displayed, specific distinction can hardly be determinately fixed. And it is probable that this will be first developed in the land

and fresh-water shells, from the comparative facility with which the subjects may be collected in their living state.

How far unlooked for casualties may sometimes befriend the researches of the Naturalist, the following circumstance will elucidate.

A few summers since, I had collected some stagnant water, for the purpose of examining the infusorial tribe; and over the head of the vessel containing this water was placed a piece of fine gauze. Some time afterwards, upon looking into the vessel, I was surprised to see the surface of the water, and the under side of the gauze strewed with minute winged insects, chiefly of the Neuropterous tribe. Is it not therefore probable, that the infusorial order of worms may be merely the minuter species of Ephemeræ in their mediate stages of transformation? Of the natural œconomy of this last tribe we know only, that the egg is dropped into water, and that it emerges in a perfect winged state. The larva and chrysalis metamorphosis must take place under water, and for this purpose they must be

furnished with organs appropriately adapted. And it may be reasonably conjectured, that the testaceous covering of some of them is merely the hardened clothing of the chrysalis. If this suggestion be wholly or partially true, a new and grand field of discovery is laid open to the curious and diligent inquirer into the microscopic works of animated nature.

The restitution, also, of forgotten fragments of intelligence may, in like manner, occasionally produce helps in every branch of scientific knowledge. And although it may not strictly apply to our immediate subject, the classical scholar will learn with pleasure, that the late discovery, by Dr. Maii, of an unpublished piece of Cicero was known, more than a century since, to our illustrious countryman, Sir Thomas Brown; who in his Bibliotheca abscondita, *among other rarities mentions,* "Marcus Tullius Cicero, *his Geography, as also a part of that magnified piece of his* De Republica, *very little answering the great expectation of it, and short of the pieces under the same name, by* Bodinus *and* Tholosanus."

The whole of my collections in British Conchology are now in your possession: and in the ensuing catalogue, nothing has been introduced of which perfect specimens cannot be found in that collection. Consequently I could not fully avail myself of the scientific papers of Mr. Jeffries in the Linnean Transactions; of Mr. Alder, in the Transactions of the Newcastle Society; nor of some local catalogues. Such as I believe to have been introduced, as British, upon doubtful authority, have this mark (†) prefixed to them. The Genus AURICULA *has been exploded, as being either altogether marine; or which, like the* TURBO tenebrosus, *and some others, having unquestioned communication with salt water, are never found in inland and transmarine localities.*

Your sincere Friend,

WILLIAM TURTON.

Bideford, Devon, 1831.

MANUAL.

THE animals which furnish the testaceous subjects about to be described, are a portion of that multitudinous division which have a soft body, without vertebral column, and which are not supported by a bony nor a cartilaginous skeleton. In general their shells are external, wholly or partially concealing and protecting the body; but in some few instances they are themselves internal, and enveloped by the body.

They may be divided into two great families.

I. CONCHIFERA.

Body without articulations or transverse segments ; without distinct head or eyes ; and always inclosed in a bivalve shell.

† *Dimiariæ.*

With two muscles of adhesion at least ; and two internal muscular impressions, distinct and lateral, in each valve.

a. *Conchæ.*

The valves with lateral teeth on each side the hinge.

1. Cyclas. The lateral teeth of one valve double.

Type. Cardium corneum, *Montagu.*

b. *Naïades.*

The valves with a single irregular tooth, simple or cloven ; or under the ligament of the hinge is a transverse elongated lamina, or a row of tubercles. Beaks generally decorticated, and often eroded or rugged.

2. Anodon. Hinge without teeth, but furnished with a transverse elongated lamina.

Type. Mytilus anatinus, *Montagu.*

3. Unio. Hinge with a single obtuse jagged tooth, which is two-lobed in one of the valves: transverse laminæ none.

Type. Mya margaritifera, *Montagu.*

4. Mysca. Hinge with a transverse crenate tooth, which in one valve is two-lobed; and a transverse elongated lamina, which is double in one of the valves.

Type. Mya ovalis, *Montagu.*

II. MOLLUSCA.

Body without articulations ; furnished with head and eyes ; and never inclosed in a bivalve shell.

a. *Limacidæ.*

Animal terrestrial. Body elongated, furnished with an external or internal shell.

5. Limacellus. Shell internal, oval, flat, without visible spire.

Type. Limacella Parma, *Brard. p.* 110.

6. Testacellus. Shell external, oval, concave, spiral at the tip, covering the lower extremity of the animal.

Type. Testacellus Maugei, *Sowerby, Genera.*

b. *Helicidæ.*

Animal mostly terrestrial, furnished with four more or less cylindrical tentacula. Shell with or without

an operculum, spiral, often ornamented externally with striæ or slight ribs; the outer margin of the aperture sometimes expanded or reflected.

* with four distinct tentacula. 7—15.

** with two of the tentacula very short or obsolete. 16, 17.

† Bulimus lineatus.

7. Vitrina. Shell extremely thin and transparent, glass-green: spire very short and flat: aperture ample, elliptic; the margin disunited at top: umbilicus none: operculum none.

Type. Vitrina pellucida, *Draparnaud, p.* 119.

8. Helix. Shell orbicular, conoid or a little flattened, obtuse: aperture transverse, oblique, semioval or lunate; the margin disunited.

Type. Helix aspersa, *Montagu.*

9. Carocolla. Shell orbicular, depressed, gradually sloping to an edge on both sides in its outer circum-

ference : aperture transverse, oval, with the margin spread and united all round : operculum none.

Type. Helix Lapicida, *Montagu.*

10. Azeca. Shell subcylindrical, rather obtuse : aperture pear-shaped, curved and pointed at top : the margin thick, obtuse, and united all round : operculum none.

Type. Turbo tridens, *Montagu.*

11. Clausilia. Shell reversed, turrited, spindle-shaped, obtuse : aperture oval, oblique, toothed : the margin obtuse and united all round : operculum internal, spiral.

Type. Turbo bidens, *Montagu.*

12. Bulimus. Shell oval or oblong, pointed : aperture longitudinal, oval, entire ; the margin disunited at top : pillar smooth, simple, rounded and entire at the base : operculum none.

Type. Helix obscura, *Montagu.*

13. Balæa. Shell reversed, turrited, pointed: aperture oval, entire and rounded at the base; the margin disunited at top: pillar with mostly a single tooth: operculum none.

Type. Turbo perversus, *Montagu.*

14. Achatina. Shell oval-oblong, obtuse: aperture longitudinal, oval, entire; the margin disunited at top: pillar smooth, simple, truncate at the base: operculum none.

Type. Buccinum terrestre, *Montagu.*

15. Succinea. Shell oval-oblong, thin; the spire very short and conic, with the lower volution very large: aperture ample, longitudinal, oblique; the margin disunited at top: umbilicus none: operculum none.

Type. Helix putris, *Montagu.*

16. Cyclostoma. Shell conic-oval: aperture orbicular, without teeth; the margin united all round: operculum with a single depressed spiral line.

Type. Turbo elegans, *Montagu.*

17. Carychium. Shell conic : aperture toothed, lateral, somewhat oblique, compressed, rather ear-shaped, rounded at both ends ; the margin disunited at top, and obtuse : operculum none.

Type. Turbo Carychium, *Montagu.*

c. *Pupilladæ.*

Animal terrestrial. Shell more or less cylindrical, obtuse at top : aperture roundish-oval, mostly toothed, truncate at top, rounded at the base, slightly reflected : lower tentacula very short or obsolete : umbilicus open : operculum none.

18. Pupa. Shell cylindrical, abruptly obtuse : aperture roundish-oval, mostly toothed ; the peritreme margined and reflected.

Type. Turbo Muscorum, *Montagu.*

19. Vertigo. Shell cylindrical, very obtuse : aperture somewhat angular, or having the outer margin contracted, toothed ; the peritreme margined and reflected.

Type. Turbo Vertigo, *Montagu.*

d. *Limnadæ.*

Animal amphibious or inhabiting fresh waters, with the tentacula flattened. Shell glossy, without operculum; the margin of the outer-lip always acute, and never reflected.

20. Planorbis. Shell orbicular, flat, discoid; the volutions horizontally convolute, and all of them visible on both sides: aperture transverse, ovate or lunate.

Type. Helix cornea, *Montagu.*

21. Segmentina. Shell orbicular, somewhat discoid: aperture oval, semiconcamerate within; the partitions transverse, and resembling a triradiate opening.

Type. Nautilus lacustris, *Montagu.*

22. Limneus. Shell regular, spiral, oblong-oval or turrited: aperture longitudinal, mostly dilated; the pillar twisted.

Type. Helix stagnalis, *Montagu.*

23. Physa. Shell reversed, oval or oblong: aperture longitudinal; the pillar simple.

Type. Bulla Hypnorum, *Montagu.*

e. *Peristomadæ.*

Animal inhabiting fresh waters. Shell furnished with an operculum: aperture circular; the margin united all round.

24. Valvata. Shell subconic or discoid: aperture exactly orbicular: operculum marked with a single spiral line.

Type. Turbo fontinalis, *Montagu.*

25. Paludina. Shell conoid or oblong: aperture roundish-oval, slightly angular at the top: operculum roundish, marked with concentric striæ.

Type. Helix vivipara, *Montagu.*

f. *Neritidæ.*

Animal inhabiting fresh water. Shell somewhat globular or semioval: aperture half divided transversely, furnished with an operculum.

26. Neritina. Shell semiglobular, flattened underneath, without umbilicus; the partition flattened, rather acute, neither toothed nor crenulate: operculum horny, with a spine.

Type. Nerita fluviatilis, *Montagu.*

g. *Patellidæ.*

Animal inhabiting fresh water, enveloped in a conic shell, which is concave underneath.

27. Ancylus. Shell thin; the crown imperforate, and inclining posteriorly: spire none: margin entire: muscular impression somewhat orbicular, and emarginate anteriorly.

Type. Patella fluviatilis, *Montagu.*

A. BIVALVES.

1. Cyclas.	3. Unio.
2. Anodon.	4. Mysca.

I. CYCLAS.

Shell bivalve, equivalve, orbicular or oval, closed all round. Hinge with two minute divergent primary teeth in each valve; and an elongated lateral one on each side, which is doubled in one of the valves. Ligament external.

* *Somewhat orbicular and equilateral.*

1. Cyclas *rivicola*. Shell rather convex and opake, with regular close-set transverse striæ.

Cyclas rivicola. *Turton, Dith. p.* 248. *t.* 11. *f.* 13. *Lamarck*, v. *p.* 558.
Cyclas cornea. *Draparn. p.* 128. *t.* 10. *f.* 1—3.
Tellina cornea. *Wood, pl.* 46. *f.* 3.
Cardium corneum. *Montagu, p.* 86. large var.

This is the largest species of the family, sometimes measuring three quarters of an inch in breadth. It is covered with a dark horny-green epidermis, under which it is dead white: the striæ are very fine, and elegantly disposed; and it is frequently marked with paler transverse zones; the inside is blueish.

It is found abundantly in the Thames, near the Red House, and in the neighbourhood of Oxford.

2. Cyclas *cornea*. Shell subglobular, thin, semi-transparent, striolate, with mostly a single groove and a yellowish marginal zone.

Cyclas cornea. *Turton, Dith. p.* 248. *t.* 11. *f.* 14.
Cyclas rivalis. *Drap.* 129. *t.* 10. *f.* 4, 5.
Tellina cornea. *Linn. Gmel.*
Cardium corneum. *Montagu, p.* 86.

About half the size of the former, but much more turgid, thinner and more transparent, one of the sides being very slightly produced: it is also most commonly marked with a single deep groove, and bordered more or less with yellow: colour pale yellow.

In most stagnant ditches and water-courses.

3. Cyclas *calyculata*. Shell rhombic-orbicular, flattish, transparent, nearly smooth, a little angular on one side, with the beaks very prominent and tubercular.

Cyclas caliculata. *Drap. p.* 130. *t.* 10. *f.* 14, 15.
Cyclas lacustris. *Turton, Dith. p.* 249. *t.* 11. *f.* 18.
Tellina lacustris. *Wood, p.* 197. *pl.* 45. *f.* 5.
Cardium lacustre. *Montagu, p.* 89.

Shell about the size of the former, but is of a flat form, a blueish-white colour, nearly smooth, and has tubercular appendages on the beaks.

In lakes and still waters, but not common.

A variety is found, more opake, with the beaks of a blackish colour, and not so prominent. It is called *Cyclas stagnicola* by Dr. Leach.

4. Cyclas *lacustris*. Shell rhombic-orbicular, flattish, striolate, a little angular on one side; with the beaks depressed and not tubercular.

Cyclas lacustris. *Drap. p.* 130. *t.* 10. *f.* 6, 7.

In its outline it very much resembles the last, but is of a more opake and dark gray colour, and has no tubercles on the beaks.

In stagnant waters, not common.

** *Oblique and inequilateral.*

5. Cyclas *amnica*. Shell obliquely oval, tumid, with regular transverse grooves, and the beaks tumid but not tubercular.

Cyclas amnica. *Turton, Dith. p. 250. t. 11. f. 15.*
Tellina amnica. *Wood, p. 153. t. 47. f. 6.*
Cardium amnicum. *Montagu, p. 86.*

Shell three-eighths of an inch broad, brownish or blueish horn colour, sometimes yellow towards the margin, produced and narrower on one side, often covered with a ferruginous coat.
In slow rivers and streams.

6. Cyclas *appendiculata*. Shell obliquely oval, very tumid, with regular transverse grooves; the beaks very tumid and somewhat tubercled.

Cyclas appendiculata. *Leach, MSS.*
Tellina Henslowensis. *Sheppard.*

Shell about half the size of the last, from which it differs, in its greater convexity, and the protrusion of the beaks, at the base of which is a groove or dark zone giving them the appearance of tubercular appendages.
In slow streams, but very rare.

7. Cyclas *pusilla.* Shell obliquely suboval, convex, slightly striate; the beaks depressed.

Cyclas pusilla. *Turton, Dith. p.* 251. *t.* 11. *f.* 16, 17.
Cyclas fontinalis. *Drap. p.* 130. *t.* 10. *f.* 9—13.?
Tellina pusilla. *Turton, Dict.*

Shell about the eighth of an inch in diameter; and differs from *C. amnica* in its greater convexity, the obscurity of its transverse striæ, and in the flatness of the beaks.

In most streams and brooks.

II. ANODON.

Shell bivalve, transverse, equivalve, inequilateral, a little open at the sides. Hinge without primary teeth, or with a small obtuse tubercle: lateral tooth a transverse elongated lamina under the ligament on the anterior side, terminating in a deep depression. Ligament external.

8. Anodon *cygneus*. Shell oval, tumid, arcuated at the front margin, with the anterior side more or less angular when young, and gradually sloping to a point when full grown.

Anodon cygneus. *Turton's Bivalves*, *t.* 15. *f.* 5.
Anodonta cygnea. *Drap. t.* 11. *f.* 6.
Mytilus cygneus. *Montagu*, *p.* 170.
Young. Anodon anatinus. *Sowerby*, *Genera*.
Anodonta anatina. *Drap. t.* 12. *f.* 2.
Mytilus anatinus. *Montagu*, *p.* 171.

Shell growing to nearly three inches long, and above six wide, green, pale brown or fawn-colour, often radiated, striate or wrinkled transversely, covered

with a thin skin, which is sometimes of a blackish colour; beaks minute, with the region about them often decorticated.

We are inclined to think that all our supposed species of this Genus may be justly resolved into one, varying in their outline, consistence, and colour, from age and local circumstances, and that the angular or winged appearance gradually lessens and forms a regular slope as it advances to its full growth; for who has seen the young of *Anodon cygneus* without the angle or wing? Thus we can only consider the *Anodon paludosus* of Turton's Bivalves, the *Mytilus stagnalis* of Sowerby's Miscellany, and the *Mytilus Avonensis* of Montagu, as mere local varieties. Our present figure represents the shell as having nearly, but not quite, lost its angular outline.

III. UNIO.

Shell bivalve, transverse, equivalve, inequilateral, a little open at the sides; with the beaks decorticated and eroded. Hinge with an obtuse conic jagged primary tooth, which in one of the valves is divided into two lobes; and a remote cardinal depression on the anterior side; lateral teeth none. Ligament external.

9. Unio *margaritiferus*. Shell oblong and slightly curved, angular at the anterior end.

Unio margaritiferus. *Turt. Dith. p.* 242. *t.* 16. *f.* 1.
Unio margaritifera. *Drap.* 132. *t.* 11. *f.* 5.
Mya margaritifera. *Linn. Gmel. Mont.*

Shell thick, strong, two inches or more long, and four or five broad, covered with a black wrinkled skin, which fringes the front margin; inside blackish-white mixed with green, with a blackish border round the edge: the front margin is a little contracted in the middle, giving a somewhat curved outline to the figure.

Young shells have the interior marginal edge, under the ligament, raised into a kind of laminar process; but the teeth distinguish it from the Anodon, and the terminal cavity from the Mysca.

Found in most rapid rivers.

IV. MYSCA.

Shell bivalve, transverse, equivalve, inequilateral, a little open at the sides. Hinge with a transverse crenate primary tooth, which in one valve is divided into two lobes: lateral teeth at the anterior side only, laminar, transversely elongated, and double in one valve, without the terminal depression. Ligament external.

10. Mysca *Batava*. Shell oblong, rounded at both ends, with the beaks rugged and warty.

Mysca Batava. *Turton, Dith. p.* 244.
Mya Batava. *Wood, p.* 103. *t.* 19. *f.* 1, 2.
Mya Pictorum. *Montagu, p.* 36.

Shell an inch long, and two broad, greenish-brown, without contraction in the front margin, by which it is chiefly distinguished from the *M. Pictorum*; inside dark-bluish.

In the river Kennet, above Newbury.

11. Mysca *Pictorum*. Shell somewhat angular and pointed at the anterior side, with the front margin a little contracted, and the beaks rugged and warty.

Mysca Pictorum. *Turton, Dith. p. 245.*
Unio Pictorum. *Drap. 131. t. 11. f. 1—4.*
Mya Pictorum. *Linn. Gmelin.*
——————— *Wood, p. 104. t. 19. f. 3, 4.*
Mya ovalis. *Montagu, p. 34.*

Shell an inch and a quarter long, and nearly three inches broad, narrow oval, covered with a yellowish-green skin; a little flexuous at the anterior side, and slightly contracted at the front margin; inside perlaceous or pale fawn-colour.
In most clear rivers.

12. Mysca *ovata.* Shell oval, tapering to the anterior end, with the front margin slightly arcuated or contracted; beaks wrinkled.

Mysca ovata. *Turton, Dith. p. 246.*
Mya ovata. *Wood, p. 105. t. 19. f. 5.*
Mya ovalis. *Montagu, p. 563.*
Mya depressa. *Donovan,* iii. *t.* 101.

Shell an inch and a half long and two and a half broad, covered with a brownish-green skin, often radiate, rather depressed; the anterior end frequently slightly falcate.
In the Thames, the Avon, and the Froome.

13. Mysca *solida*. Shell thick, ponderous, and somewhat cylindrical, conically tapering to a point at the anterior end; beaks wrinkled.

Mysca solida. *Turton, Dith. p.* 246. *t.* 16. *f.* 2.
Mya ovata. *Donovan,* iv. *t.* 122.

Shell two inches long and three and a half broad, nearly cylindrical, covered with a blackish-brown skin, thick and solid, with the front margin thick and very obtuse; beaks rugged and often decorticated.

In the Avon, near Bristol.

B. UNIVALVE *Landshells.*

LIMACIDÆ.

Body an elongated slug, furnished with a shell; which is either external, and covering the lower extremity of the animal; or internal, and placed behind the head of such of the naked slugs as have more or less of a carinated ridge along the back.

5. Limacellus. || 6. Testacellus.

V. LIMACELLUS.

Shell oval-oblong, flat, slightly concave, entirely open, without spire or pillar.

Found in the interior of some of the land slugs, and situated beneath the hinder part of the thoracic disk; generally single, but sometimes double, and even triple.

The perfect shell is only found in such of the slugs as have a carinated ridge down the back, at least on its lower extremity. Thus the large gray slug with stripes of darker spots, is armed with this

internal testaceous shield; but the common black or brown slug has none, or the mere unformed rudiments.

Like the shells which are found enveloped in some of the marine Mollusca, we consider, with the French naturalist Brard, that they are entitled to classical arrangement, and merit a place among the testaceous productions of our islands.

14. Limacellus *Parma.* Shell thin, flat, oblong, a little concave, with a membranaceous margin.

Limacella Parma. *Brard, p.* 110. *t.* 4. *f.* 1, 2, 9, 10.
——————— *De Férussac, tab.* 4. *fig.* 4.
——————— *Lister, tab. anat.* 5. *fig.* 5.

Shell about six lines long and four broad, thin, semi-transparent, yellowish-white, concave on the inside, which is sometimes sprinkled with minute crystal-like shining particles, a little convex and transversely wrinkled on the outside; with the edges membranaceous: on the top, or broader extremity, is a small central prominence, or apophysis of adhesion, by which it is attached to the animal; the lower extremity very thin and rounded.

Found in the *Limax maximus*, or dark gray slug, with longitudinal stripes of darker spots, and the keel a little toothed or undulated.

15. Limacellus *Unguiculus*. Shell rhombic, thickish, flat, rarely concave.

Limacella Unguiculus. *Brard, p.* 116. *t.* 4. *f.* 3, 4, 11, 12.

Found in the *Limax carinatus*, Leach, *Mollusc. p.* 73. *t.* 8. *f.* 1. or gray slug, with a saffron-coloured keel, which reaches to the very top of the back, and touches the disk or shield.

It is about half the size of the last.

16. Limacellus *variegatus*. Shell thin, concave, mammillated externally at its posterior extremity.

About the size of the last, and is found in the slug, which is of a yellowish or blackish-gray colour, variegated with pale yellow or saffron, with the thorax elegantly spotted with clay-yellow or saffron colour; and the keel saffron or pale yellow.

Limacella concava. *Brard, p.* 121. *t.* 4. *f.* 5, 6, 13, 14, 15.

Found in gardens, under stones.

17. Limacellus *obliquus*. Shell small, very thick and hard, variously formed, and rarely concave.

Limacella obliqua. *Brard, p.* 148. *t.* 4. *f.* 7, 8, 17, 18.

Found in the common field slug, varying infinitely in size and colours, but is easily distinguished by its short keel, which is always placed obliquely.

VI. TESTACELLUS.

Shell oval-oblong, flat beneath, somewhat spoon-shaped, with a very short spire. Aperture oblong, extremely large; the outer lip thin, with a slight notch at the spiral extremity; the pillar-lip thickened, and a little revolute.

The species of this very singular Genus are found attached to the lower extremity of a slug, with the spiral apex pointing towards the tail. This testaceous appendage, Maugé, who brought the animal from Teneriffe, supposes to be intended as a covering for the orifice of the cleft in which it secretes itself during the day-time. As natives of England they were first noticed, we believe, by Mrs. Smith of Bristol, who found the shells casually scattered about the walks of her garden, and afterwards discovered the animal.

18. Testacellus *Maugei*. Shell oval-oblong, with the outer lip elevated nearly even with the spire, and the pillar slightly rounded, and reflected outwardly.

Testacellus Maugei. *De Férussac, p. 94. t. 8. f. 5—9.*

——————— *Sowerby, Gen. fig. 7—10.*

Testacella haliotidea. *Drap. tab. 8. f. 46, 47, 48.*

Testacellus europæus. *Montfort, ii. p. 95.*

Shell half an inch long and a quarter of an inch broad, thick, white covered with a yellowish skin, a little convex on the outside, and vaulted under the spire, which is slightly prominent and consists of a single minute papillary twisted volution placed on one side, the angle opposite to which is raised nearly as high as the commencement of the spiral twist, and furnished with a small notch: pillar lip thickened at top, and a little reflected outwardly: outside wrinkled and marked with coarse transverse striæ.

In gardens about Bristol, and in Ireland.

19. Testacellus *Scutulum.* Shell oval-oblong, narrowed at the spiral extremity, and the outer angle depressed below the spire; pillar rather rounded and reflected outwardly.

Testacellus Scutulum. *Sowerby, Gen. f. 3—6.*

Shell about half the size of the last, and differing in its more oval shape, in consequence of the angle

opposite the spire not being in the least elevated, making that extremity much narrower and more pointed than the opposite one.

Found by Mr. Sowerby in a garden at Lambeth.

20. Testacellus *haliotideus*. Shell roundish-oval, with the outer lip dilated, and the pillar flat and broad, and scarcely reflected outwardly.

Testacellus haliotideus. *Sowerby, Gen. fig.* 1, 2.
Testacella haliotidea. *Drap. t.* 8. *fig.* 44, 45.

Shell smaller than *T. Maugei*, from which it differs in being much broader in proportion to its length, and in having the pillar near the upper end broad and nearly flat.

Found in the garden of the garrison at Plymouth, and once in our own garden at Bideford.

HELICIDÆ.

Body a spirally twisted slug. Shell spiral, with or without an operculum, generally thin, and armed externally only with striæ or slight ribs : aperture never emarginate at the base nor reflected back, with the outer margin sometimes expanded, or reflected.

7. Vitrina.
8. Helix.
9. Carocolla.
10. Azeca.
11. Clausilia.
12. Bulimus.
13. Balæa.
14. Achatina.
15. Succinea.
16. Cyclostoma.
17. Carychium.

VII. VITRINA.

Shell oblong, extremely thin, brittle and transparent, with a slightly raised obtuse spire, consisting of two or three volutions, the outer one extremely large. Aperture ample, elliptic, wider than it is high, interrupted by the second volution, without operculum ; umbilicus none.

A Genus very nearly allied to the *Helix*, but distinguished by its oblong or semi-elliptic figure and its large produced aperture.

21. Vitrina *pellucida*. Shell green, depressed, hyaline and glossy: aperture somewhat oval.

Vitrina pellucida. *Drap. p.* 119. *t.* 8. *f.* 34—37.
Vitrina Draparnaldi. *Leach, Mollusc. p.* 80.
Vitrinus pellucidus. *Montfort*, ii. *p.* 239.
Helix elliptica. *Brown, Wern. S.* ii. *t.* 24. *f.* 8.

Shell half an inch long, not so much in height, extremely thin and transparent, of a pale watery green and quite smooth: volutions three, the first very large and a little oblique, the others but little raised and ending obtusely: aperture very large, oval-elliptic, rather oblique, interrupted at top by the prominency of the second volution, with the margin thin and membranaceous, often coloured with a pale brown border, without internal rib: the suture well marked, and when magnified exhibiting a striated spiral line; pillar lip a little reflected, and forming a slight concavity, but not an umbilicus.

In woods, among decayed leaves, and under stones.

22. Vitrina *elongata*. Shell whitish, nearly globular, hyaline: aperture oval-oblong; volutions two.

Vitrina elongata. *Drap. t.* 8. *f.* 41.

Shell about half the size of the last, white and transparent, with hardly two volutions, the outer one extremely large in proportion.

Found sometimes with the last.

VIII. HELIX.

Shell orbicular, thin, with a pyramidal spire which is rather obtuse and consisting of five or six volutions. Aperture lateral, semilunar or semi-elliptic; the margin interrupted by the convexity of the penultimate volution: operculum none.

Confined to the above character, this is now a very natural family, abundantly and universally spread over the surface of the whole earth. And although some of them, more particularly the *H. Pomatia*, have the aperture guarded in the winter by a cretaceous epithem, or by a more or less thick cuticle, they cannot be said to possess a regular operculum, as this covering is not attached to the animal, and therefore not moveable at its control, but is dissolved in the spring, leaving the aperture naked.

They feed on fruits, and animal and vegetable substances; are furnished with four tentacula, the two front ones shorter, and all of them having eyes at their tips. Many of them, in the spring of the year, when they approach each other, eject or cast forward a spiculum or dart; and this with sufficient force to strike each other: this dart is gene-

rally single, rarely double or triple, mostly simple, but sometimes forked, the uses of which naturalists have not yet ascertained, unless it be for sexual or specific discrimination.

In the evening, and after showers, they crawl forth in search of food; and soon after the dawn of day retire to their hiding places, under stones and other sheltered repositories, and in close hedges.

† The mouth surrounded internally with a rib, and the umbilicus closed.

23. HELIX *nemoralis*. Shell somewhat globular, smooth, yellowish or brown and mostly banded, with the peritreme or margin of the aperture brown.

Helix nemoralis. *Linn. Montagu, p.* 411.
——————— *Drap. p.* 94. *t.* 6. *f.* 3—5.
——————— *Brard, p.* 12. *t.* 1. *fig.* 2 & 4.
Tachea nemoralis. *Leach, Mollusc. p.* 84.
Cochlea fasciata. *Da Costa, p.* 76. *t.* 5. *f.* 1, 2, 3, 8, 19.

b. with the volutions much produced and detached from each other.

c. with the volutions reversed.

Shell hardly an inch in diameter, and about three quarters high, glossy, semitransparent, finely

striate: spire composed of five rounded volutions: aperture semielliptic, longer than wide, the peritreme produced at the pillar in a nearly straight line where it is flattened and thickened, surrounded by a chocolate or reddish brown border: colour yellow, reddish, brownish or whitish, uniform or marked with from one to five brown bands, and subject to every variety that can arise from the presence or absence of any of the bands, or from their confluence.

Common in hedges.

24. Helix *hortensis*. Shell somewhat globular, smooth, yellow or brown, uniform or banded, with the peritreme white.

Helix hortensis. *Drap. p.* 95. *tab.* 6. *f.* 6.
——————— *Brard, p.* 16. *tab.* 1. *f.* 3.
——————— *Montagu, p.* 412.
Tachea hortensis. *Leach, Mollusc. p.* 85.
Cochlea fasciata. *Da Costa, p.* 76. *t.* 5. *f.* 4, 5.

Shell about a fourth part smaller than the last, which in colour and varieties it much resembles; but is distinguished by its smaller size, in not being quite so convex, and in the white margin round the aperture. It is never found in conjunction with the

former, and is considered to be a perfectly distinct species.

Common in hedges.

25. Helix *Arbustorum*. Shell somewhat globular, brown or yellowish, marbled and marked with a single band.

a. chestnut with a darker band.
b. greenish-yellow with a pale band.
c. without band, and marbled with white spots.

Helix Arbustorum. *Linn. Montagu, p.* 413.
——————— *Drap. p.* 38. *t.* 5. *f.* 18.
——————— *Brard, p.* 65. *t.* 2. *f.* 12.
Arianta Arbustorum. *Leach, Mollusc. p.* 86.
Cochlea unifasciata. *Da Costa, p.* 75. *t.* 17. *f.* 6.

Shell about three quarters of an inch high, and as much in diameter, but variable in size and proportion, striate, mostly brown marbled with small yellowish spots, or greenish-yellow with whitish spots, with a single blackish band which winds round the middle of the lowest volution and continues round the base of the rest, not penetrating the aperture: this band is often faint, rarely wanting: aperture semielliptic, longer than wide, more

produced at the pillar side, with the margin slightly reflected and white, with a white internal rib.

In wet shady places.

†† The mouth surrounded internally with a rib, and the umbilicus open and central.

26. Helix *Carthusiana*. Shell slightly depressed, semitransparent, whitish with an obscure paler band; region of the aperture rufous-brown: umbilicus small.

Helix Carthusiana. *Drap. p.* 102. *t.* 6. *f.* 33.
——————————— *Brard, p.* 24. *t.* 1. *f.* 6.
Helix Cantiana. *Montagu, p.* 422. *t.* 13. *f.* 1.
Teba Cantiana. *Leach, Mollusc. p.* 94.

Shell about three quarters of an inch in diameter, irregularly striate transversely, thin and nearly transparent, of a pale yellowish-white or lead-colour, rufous about the mouth and underneath; the lower volution tumid and well rounded, not carinated, but mostly marked with an obscure pale band in the middle: aperture semielliptic, as wide as long, with a thin but not reflected margin; the internal rib white or rosy: umbilicus small.

From the *Helix rufescens* it may be distinguished: 1. by its greater size and convexity: 2. in not

being so strongly and regularly striate: 3. in wanting the subcarinated ridge on the lower volution: 4. in the umbilicus not being above half the size.

In sandy and chalky districts.

27. Helix *Carthusianella*. Shell depressed, semi-transparent, grey with a milk-white band across the aperture externally: umbilicus minute.

Helix Carthusianella. *Drap. p.* 101. *t.* 6. *f.* 31, 32. and *t.* 7. *f.* 3, 4.

——————— *Brard, p.* 24. *t.* 1. *f.* 7.

Teba Carthusianella. *Leach, Moll. p.* 95. *t.* 8. *f.* 4—6.

Shell not half an inch in diameter, more depressed than the last, and not so glossy, without the rufous stain about the mouth and underneath: aperture more narrowed; and the umbilicus very minute, on the outside of the aperture is a milk-white transverse band.

In the chalky districts of Kent and Sussex.

28. Helix *rufescens*. Shell flattish, transversely striate, slightly carinated by a narrow paler band: umbilicus large and deep.

Helix rufescens. *Montagu, p.* 420. *t.* 23. *f.* 2.
Teba rufescens. *Leach, Mollusc. p.* 96.
Helix glabella. *Drap. p.* 102. *t.* 7. *f.* 6.

Shell growing to three quarters of an inch in diameter, but is often smaller, semitransparent, varying from pale ash-colour to rufous brown, often marbled and mottled with paler or darker blotches, rarely pure white, slightly carinate in the middle of the larger volution by a paler band: aperture semielliptic, thin and slightly reflected, longer than broad.

Montagu, and all who have copied from him, have represented the young of this species as clothed with hairs; but we have a complete series, all preserving their exact characteristics, and without the least appearance of hairs. We believe that what he mistook for the young, is our *Helix hispida*, No. 41.

29. Helix *sericea*. Shell somewhat globular, transparent, yellowish horn-colour, hairy, with nearly six tumid volutions: umbilicus very small.

Helix sericea. *Drap. t.* 7. *f.* 16, 17.
Helix hispida. *Montagu, t.* 23. *f.* 3.
Teba hispida. *Leach, Mollusc. p.* 98.

Shell a quarter of an inch in diameter, and as much high, pale horn-colour, frequently a little rufous about the mouth, extremely thin and light, clothed with a very fine down, which when shed or worn off, leaves the surface glossy and minutely granulate like shagreen: aperture crescent-shaped, rather wider than long, very thin, and reflected only at the umbilicus, which is extremely small. The larger volution is well rounded, without keel or band, and the internal rib only visible in full-grown specimens.

This is evidently not the *H. hispida* of the continental writers, who describe the shell as depressed, brown, striate, with the larger volution carinated and marked with a white band, and omit any notice of the finely granular surface.

In damp shady places.

30. Helix *cingenda*. Shell with the larger volution rather flat at top, marked with numerous brown and yellowish bands: the mouth mostly rose-colour.

Helix cingenda. *Montagu, p.* 418. *t.* 24. *f.* 4.
Teba cingenda. *Leach, Mollusc. p.* 92.
Helix Rhodostoma. *Drap. p.* 86. *t.* 5. *f.* 13—15.
Helix strigata. *Dillwyn, p.* 911.

Shell about half an inch in diameter, and not so much high, with the volutions a little flattened at top, slightly striate : colour whitish or yellowish, rarely without coloured bands, but mostly with seven or eight brown circular lines on the lower volution, often broken into dots; the tip black : these bands are very variable : aperture longer than wide, with the margin thin and reflected at the pillar, where it half closes the narrow but deep umbilicus : the region of the mouth is generally of a more or less intense rose-colour.

1. with the mouth rosy.
2. with the mouth whitish.
3. dull greyish-white without marks.

On dry sandy plains.

31. Helix *virgata*. Shell somewhat globular, white with from one to six brown bands : the mouth dull rufous.

b. with the spire conically produced into six or seven volutions.

c. with the spire much elongated, and the volutions detached.

Helix disjuncta. *Turton, Dict. p.* 61. *fig.* 63.

Helix virgata. *Montagu, p.* 415. *t.* 24. *f.* 1.
Teba virgata. *Leach, Mollusc. p.* 93.
Helix variabilis. *Drap. p.* 84. *t.* 5. *f.* 11, 12.
Helix striata. *Brard, p.* 36. *t.* 2. *f.* 5, 6.
Helix zonaria. *Donovan,* ii. *tab.* 65.
Helix Pisana. *Dillwyn, p.* 911.

Shell about half an inch in diameter, and nearly as much high, usually white with a single dark brown band in the middle of the larger volution, and several irregular ones at the base ; but subject to infinite variations from the presence or absence or confluence of the bands, the most singular of which is that of a dark brown with a single white band, and that of a pure opake white with transparent white bands : the tip generally black : about the mouth and pillar dull rufous : aperture longer than broad, the margin thin and reflected at the umbilicus, which is small and deep.

When young, the larger volution slopes to a somewhat carinated edge.

Perhaps the *Trochus terrestris* of Donovan, Plate III., with a spiral brown streak round the middle of the volutions, may be a conical variety of this very variable species.

In vast abundance on sandy plains, especially about the sea-coasts.

In the autumn these shells are often suddenly

collected in such great numbers, as to give rise to the popular notion of their having fallen from the clouds; and in very hot weather, the young both of this species and the *H. cingenda* may be found in clusters adhering to the stalks of various plants, with the aperture closed by a thin pellicle, except where it is in contact with the plant.

The *Helix Scarabæus*, in like manner, is sometimes found in such vast profusion, in the maritime plains of Amboina, that they are supposed by the natives to have fallen from the clouds in showers, whence Rumphius calls the species *Cochlea Imbrium*.

32. Helix *caperata*. Shell flattish, yellowish with brown interrupted bands and spots, and strongly striate transversely.

b. dull greyish-white without bands.

Helix caperata. *Montagu, p.* 430. *t.* 11. *f.* 11.
Teba caperata. *Leach, Mollusc. p.* 97.
Helix striata. *Drap. p.* 106. *t.* 6. *f.* 18—21.
Helix intersecta. *Brard, p.* 39. *t.* 2. *f.* 7.
Helix crenulata. *Dillwyn, p.* 895.

Shell seldom half an inch in diameter, and a quarter of an inch high, rather compressed; the larger volution sloping to a somewhat carinate edge in

the middle, with regular transverse striæ: colour dull yellowish-white, with regular brown bands, which are often interrupted, and the tip black: aperture crescent-shaped, as long as it is broad, with the margin thin and not reflected over the umbilicus, which is large and deep.

On dry banks, and under stones in hilly places.

33. Helix *spinulosa*. Shell conic, brown horn-colour, with the suture deep; the epidermis rising into thin spinous foliations: aperture semielliptic.

Helix spinulosa. *Montagu, p.* 549. *t.* 11. *f.* 10.
Teba spinulosa. *Leach, Mollusc. p.* 100.
Helix aculeata. *Drap. p.* 82. *t.* 7. *f.* 10, 11.
Trochus terrestris. *Pennant, p.* 292. *t.* 83. *f.* 5.
Trochilus terrestris. *Da Costa, p.* 36.

Shell about the tenth of an inch wide, and as much high, thin, semitransparent brown horn-colour: the volutions rounded and deeply separated, clothed with a thin epidermis, which rises into numerous regular rather oblique foliations shooting into points, exhibiting the appearance of a circle of bristles round the middle of each: aperture somewhat orbicular, as long as wide, with a white rib on the inside: umbilicus moderately large and

deep. When deprived of the skin, it very much resembles a small Trochus.

This is probably the *Trochus terrestris Mortoni* of Da Costa, who represents it as hardly the fourth part of a barley-corn in size, of the Trochus shape, of a light brown colour, of four wreaths, with deep striæ, and the larger wreaths rising into a sharpish edge.

Pennant's shell, described as minute, conic and livid, and represented as having been discovered by Mr. Hudson in the mountains of Cumberland, is in all probability this species, perhaps deprived of its epidermis. We have found it under stones, on the summits of the lofty hills around Torquay, in Devonshire.

In woods among moss and dry leaves.

††† The mouth without the internal rib, and the umbilicus closed or nearly so.

34. Helix *Pomatia*. Shell globular, striate, pale rufous with obscure darker bands: aperture nearly circular.

b. with the volutions reversed.

c. with the volutions prolonged, and almost unconnected.

Helix Pomatia. *Linn. Montagu, p.* 405.
——————— *Drap. p.* 87. *t.* 5. *fig.* 20—22.
——————— *Brard, p.* 19. *tab.* 1. *fig.* 5.
Cochlea Pomatia. *Da Costa, p.* 67. *t.* 4. *f.* 14.
Pomatia Antiquorum. *Leach, Mollusc. p.* 89.

Shell two inches long and as much high, rather solid, with the body volution extremely large and inflated, the others very little rounded, strongly striate across, and minutely so in a spiral direction: colour whitish with the bands hardly visible, or pale tawny with usually four darker bands, two of them penetrating the aperture at the pillar: aperture somewhat orbicular, longer than broad, with the margin thick, and reflected at the pillar so as in general to cover the umbilicus or nearly so; the inside of a pale violet brown.

In the winter the mouth is closed by a thin calcareous lid or epiphragm, which however is not attached to the inhabitant like the true operculum of the Cyclostoma and the Paludina, but having performed its office of protection from severe cold, is dissolved upon the approach of summer, not by the increased heat of the atmosphere, but by a phosphorous acid which at that season it abundantly secretes.

In the first volume of the Zoological Journal, at p. 99, Mr. Gaspard supposes that the epiphragm seals up the mouth hermetically during the winter, and

that in this state the inhabitant is without animal heat, nutrition, respiration or circulation, and utterly devoid of all animal organic formation, observing in testimony, that they may be immerged in water during the winter, and yet recover themselves in the spring. This would suppose not only the utter extinction of vital existence, and actual death, but an annual reviviscence and regeneration of life; a doctrine quite at variance with our knowledge of the laws of physiology as applicable to animated nature.

But upon examination it will appear, that in the centre of this epiphragm is an exceedingly minute orifice, communicating with an umbilical chord, which is connected with a fine placenta-like tissue of vessels penetrating into the pulmonary cavity itself. And this minute orifice, although not large enough to admit a drop of water, is of sufficient capacity for the passage of that quantity of oxygenated air necessary for the purposes of extremely slow but not totally extinct respiration. If this orifice be covered over with a coat of wax or varnish so that all possible connexion with external air be excluded, animal life becomes altogether extinguished, never to be again restored. We have observed this minute puncture in the winter covering of the *H. Ericetorum* and some others;

and it is probable that all whose aperture is closed during the cold season only, are furnished with this beautiful apparatus for the preservation of life.

After the animal has been extracted, there remains at the bottom of the shell a glairy transparent matter, which affords one of the best and most durable cements in nature, resisting every degree of heat and moisture.

From the time of the Romans, who fattened them as an article of food, they have been eaten by various European nations, dressed in various ways. Petronius Arbiter twice mentions them as served up at the feast of Trimalchis (Nero), first fried, and again grilled on a silver gridiron.

At one period it seems that they were admitted at our own tables; as Lister, in his *Hist. Anim. Angl. p.* 111, tells us the manner in which they were cooked in his time: "They are boiled in spring water, and when seasoned with oil, salt and pepper, make a dainty dish." "Coquuntur ex aquâ fluviatili, et adjectis oleo, sale et pipere, lautum ferculum præparant." And Ben Jonson, in 'Every Man in his Humour,' mentions this dish as a delicacy.

....."Neither have I
"Dressed snails or mushrooms curiously before me."

These circumstances suppose their long foreknown

establishment in this country; and together with their general diffusion in certain soils, incline us to consider them as indigenous, and not introduced by Sir Kenelm Digby for medicinal purposes, nor, according to Da Costa, by Mr. Howard as an article of food.

It is probable that this is the species mentioned by Sallust, so instrumental in the capture of the castle near the river Malacha in Spain, and which effected the termination of the Jugurthan war.

This castle was besieged by Marius the Roman general, who from its strength and resistance began to despair of reducing it. One Ligus, a mercenary of the army, wandering to procure water from the camp to the foot of the castle, found some snails crawling among the rocks: and having gathered first one, then another, and anxious to get more, was by little and little conducted to the summit of the mountain, at the back of the castle, by a rugged and unknown path. Perceiving the enemy busied in defending themselves in the front of the castle, with their backs towards him, Ligus stole down undiscovered, and informing his general of the circumstance, Marius sent a chosen band under the guidance of Ligus by the same path, who rushing unexpectedly on the besieged shortly took the castle.

The whole story is told with such elegance of circumstantiality, that the scholar will probably not be displeased at having it brought to his remembrance.

"At Marius, multis diebus et laboribus consumptis, anxius trahere cum animo suo, omitteretne inceptum, quoniam frustra erat, an fortunam opperiretur, quâ sæpè prosperè usus fuerat. Quæ cum multos dies noctesque æstuans agitaret, fortè quidam Ligus, ex cohortibus auxiliariis, miles gregarius, castris aquatum egressus, haud procul ab latere castelli quod adversum præliantibus erat, animadvertit inter saxa repentes cochleas ; quarum cum unam, atque alteram, dein plures peteret, studio legundi paulatim prope ad summum montis aggressus est. Ubi postquam solicitudinem intellexit, more humanæ cupidinis ignara visundi, animam vertit. Et fortè in eo loco grandis ilex coaluerat inter saxa, paululum modò prona, dein flexa, atque aucta in altitudinem, quo cuncta gignentium natura fert: cujus ramis modò, modò eminentibus saxis, nisus Ligus, castelli planitiem perscribit; quod cuncti Numidæ intenti præliantibus aderant. Exploratis omnibus, quæ mox usui fore ducebat, eodem regreditur, non temere, ut ascenderat, sed tentans omnia, et circumspiciens. Itaque Marium properè adit, acta edocet, hortatur ;

ab eâ parte quâ ipse descenderat, castellum tentet: pollicetur sese itineris periculique ducem. Marius cum Ligure promissa ejus cognitum ex præsentibus misit: quorum, uti cujusque ingenium erat, ita rem difficilem, aut facilem, renunciavêre. Consulis animus paululum arrectus. Itaque ex copia tubicinum et cornicinum, quinque numero quàm velocissimos delegit, et cum his, præsidis qui forent, quatuor centuriones: omnisque Liguri parere jubet, et ei negotii proximum diem constituit. Sed ubi ex præcepto tempus visum, paratis compositisque omnibus, ad locum pergit. Ceterum illi, qui centuriis præerant, prædocti ab duce, arma, ornatumque mutaverant, capite atque pedibus nudis, uti prospectus nisusque per saxa facilius foret, super terga gladii, et scuta: verum ea Numidica, ex coriis, ponderisque gratiâ, simul et offensa quò leniùs streperent. Igitur prægrediens Ligus, saxa, et si quæ vetustate radices eminebant, laqueis vinciebat, quibus allevati milites faciliùs adscenderant: interdum timidos insolentia itineris levare manu: ubi paulò asperior adscensus erat, singulos præ se inermes mittere: dein ipse cum illorum armis sequi: quæ dubia nisui videbantur, potissimùm tentare; ac sæpiùs eadem adscendens ac descendens, dein statim digrediens, ceteris audaciam addere. Igitur diu, multùmque fatigati, tandem

in castellum præveniunt; desertum ab ea parte, quod omnes, sicut aliis diebus, adversum hostes aderant. Marius, ubi ex nunciis, quæ Ligus egerat, cognovit quamquam toto die intentos prælio Numidas habuerat, tum vero cohortatus milites, et ipse extra vinea egressus, testudine acta succedere, et simul hostem tormentis sagittariisque, et funditoribus eminùs terrere.

"At Numidæ, sæpè anteà vineis Romanorum subversis, item incensis, non castelli mœnibus sese tutabantur; sed pro muro dies noctesque agitare: maledicere Romanis: ac Mario vecordiam objectare: militibus nostris Jugurthæ servitium minari: secundis rebus feroces esse. Interim, Romanis hostibusque prelio intentis, magnâ vi utrimque, pro glorià atque imperio, his illi pro salute certantibus, repentè a tergo signa canere; ac primo mulieres, et pueri qui visum processerant, fugere; deinde, uti quisque muro proximus erat, postremo cuncti armati inermesque. Quod ubi accidit, eo acriùs Romani instare, fundere, ac plerosque tantummodo sauciare, dein super occisorum corpora vadere, avidi gloriæ certantes murum petere, neque quemquam omnium præda morari. Sic fortè correcta Marii temeritas gloriam ex culpâ invenit."

In chalky and gravelly counties.

35. Helix *aspersa*. Shell somewhat globular, with the surface wrinkled, yellowish brown or olive with four brown bands: the peritreme white and reflected.

b. olive brown without bands.

c. the shell reversed.

d. the volutions much elongated and unconnected.

Helix aspersa. *Montagu, p.* 407.
——————— *Drap. p.* 89. *tab.* 5. *f.* 23.
——————— *Brard, p.* 7. *tab.* 1. *f.* 1.
——————— *Leach, Mollusc. p.* 82.
Helix hortensis. *Donovan, t.* 131. *Turt. Dict. p.* 60.
Helix grisea. *Dillwyn, p.* 943.
Cochlea vulgaris. *Da Costa, p.* 72. *t.* 4. *f.* 1.

Shell an inch and a half in diameter, covered with a creased or coarsely wrinkled skin, somewhat globular, with the mouth a little longer than wide, the edge of which is slightly reflected; of a dull olive colour with generally four interrupted brown bands, one and rarely two of them penetrating the mouth. It varies much in colours and markings, but is readily known by its wrinkled coat.

The internal spicula or darts, which this species ejects in the spring of the year, are about a quarter of an inch long, slender and tapering to a fine point,

exactly square with four sharp angles, rounded and hollow at the top like the socket of a joint. A magnified figure may be seen in Lister's anatomical tables at the end of his Conchology, 2. *fig.* 1.

The snail which inhabits this shell seems to be more influenced by the weather than many of the smaller sort; for upon the first appearance of cold they creep into crevices and under stones, clustering together and clinging to each other, as if they were capable of communicating warmth by association. They are the pest of gardens, especially such as are inclosed by hedges and old walls. Upon many of them are found a series of thin circular layers placed horizontally: these are the laminar foliations of the hibernal epiphragm left by another of the species which had been attached to it.

Too common every where.

36. Helix *fusca*. Shell depressed, wrinkled, transparent, amber-colour, immaculate: aperture crescent-shaped.

Helix fusca. *Mont. p.* 424. *t.* 13. *f.* 1.
——————— *Turt. Dict. p.* 946.

Shell three-eighths of an inch in diameter, and a quarter of an inch high, very thin and pellucid,

more or less wrinkled, glossy amber-colour : aperture crescent-shaped, very thin, as long as broad, reflected only at the pillar-angle, where there is a depression, and sometimes may be observed a minute perforation or umbilicus.

Dr. Leach does not seem to have been acquainted with this beautiful species.

In woods, among decayed leaves, rather rare.

†††† The mouth without the internal rib, and the umbilicus open and central.

37. Helix *Ericetorum*. Shell flat, semitransparent, grey or brownish, and generally banded : aperture roundish : umbilicus very large and deep.

Helix Ericetorum. *Montagu, p.* 437. *t.* 24. *f.* 2.
Zonites Ericetorum. *Leach, Mollusc. p.* 101.
Helix Cespitum, b. *Drap. p.* 109. *t.* 6. *f.* 16, 17.
Helix Ericetorum. *Brard, p.* 45. *t.* 2. *f.* 8.
Helix Erica. *Da Costa, p.* 53. *t.* 4. *f.* 8.

Shell nearly an inch in diameter, much depressed at top, slightly striolate, of a grey or rusty-brown colour, with generally a brown band above continuing round the edge of the smaller volutions; sometimes the bands are so obliterated as to be

hardly visible. Aperture nearly orbicular, not much interrupted by the penultimate volution, longer than broad, the peritreme very thin and not reflected; umbilicus very large, and so open and deep as to expose three or four of the volutions.

Draparnaud has, by some oversight, both in the reference to his figures and in his description, combined together his *H. Cespitum* and *H. Ericetorum*: hence in the specific character he has represented the peritreme as margined.

On dry heaths and downs.

38. Helix *nitens*. Shell flat, transparent, glossy, with six volutions, greenish horn-colour, white underneath: aperture narrow crescent-shaped.

Helix nitidula. *Drap. p.* 117. *tab.* 8. *f.* 21, 22.
Helix nitens. *Linn. Trans.* viii. *p.* 198. *t.* 5. *f.* 7.
Helix lucida. *Mont. p.* 425. *t.* 23. *f.* 4.
Helix nitida. *Drap. p.* 117. *t.* 8. *f.* 23 *to* 25.
——— *Brard, p.* 31. *t.* 2. *f.* 2.
Zonites lucidus. *Leach, Mollusc. p.* 104.

Shell sometimes growing to nearly three quarters of an inch in diameter, but is usually not half the size, glossy and irregularly striate, with six volutions

which are well defined by the suture ; underneath milky-white, especially about the umbilicus, which is large and very deep : aperture oblong crescent-shaped, compressed, oblique, as long as it is wide.

Wet woods and under stones.

39. Helix *alliaria*. Shell a little convex both sides, with five volutions, transparent, glossy horn-colour paler underneath : aperture broad crescent-shaped.

May be easily distinguished from the last by its smaller size, greater convexity, lesser number of volutions, the colour underneath not being so decidedly white, and the aperture being broader than it is wide.

When fresh taken it diffuses an odour exactly like the smell of garlic, so powerful that two or three of them will scent a room for some hours.

First distinguished by Mr. Millar, of Bristol.

Wet woods and under stones.

40. Helix *lucida*. Shell flat, transparent, glossy brown horn-colour and the same underneath : aperture crescent-shaped.

Helix lucida. *Drap. p.* 103. *t.* 8. *f.* 11, 12.
———————— *Brard, p.* 34. *t.* 2. *f.* 3, 4.

Shell about half the size of the last, with about five volutions, of a greenish hyaline colour, with regular transverse striæ, sometimes brownish horn-colour; sometimes a little wrinkled or striate at the sutures only.

From all the varieties of the *H. nitens* it may be distinguished, by the want of the whiteness underneath; the aperture is also more rounded, and the outer volution comparatively larger: the animal is black-grey, growing paler in the more lucid varieties.

A variety, perhaps a distinct species, has been sent to us by Mr. Alder under the name of *H. exavata* with the following remarks.—When full-grown it has one whorl more, they are consequently more closely set, and the outer one is smaller in proportion: it is more strongly striate, more convex on both sides, and the umbilicus is much larger. The animal is paler, and it is always found under decayed wood, in more elevated spots, and not in ditches and marshes, like *H. lucida.*

41. Helix *hispida.* Shell slightly convex, a little carinate, striolate, transparent, horn-colour, hairy: umbilicus moderate.

Helix hispida. *Drap. p.* 103. *t.* 7. *f.* 20—22.
———— *Brard, p.* 27. *t.* 2. *f.* 1.

Shell about a quarter of an inch in breadth, and hardly as much high, horn-colour with a slight paler circle in the middle of the larger volution; clothed with fine hairs which are very caducous, under which it is a little striate but not granular like the *H. granulata*: aperture moderate, twice as large as that of the *H. sericea*.

In old walls and hedges.

12. Helix *crystallina*. Shell flat, glossy, of a greenish crystalline transparency: with six very gradually increasing volutions: aperture semilunate: umbilicus small.

Helix crystallina. *Drap. p.* 118. *t.* 8. *f.* 13—18.
Zonites crystallinus. *Leach, Mollusc. p.* 105.

Shell hardly the eighth of an inch in diameter, flat above and a little convex beneath, with six volutions which enlarge gradually from the centre, of a crystalline or watery transparency with a slight tinge of green: aperture crescent-shaped: umbilicus deep and rather large.

It may be known from the young of any of the former ones by its watery transparency, and by the number and regularity of its volutions, which increase in a gradual proportion, not having the outer one much larger than the rest.

In wet meadows.

43. Helix *pura*. Shell flattish, glossy, of a pale horny crystalline transparency, with four and a half volutions which suddenly enlarge : aperture oblique : umbilicus rather large.

Shell larger than the last, more convex and more distinctly striolate, not so transparently hyaline ; and may be easily distinguished, 1. by the number of its volutions ; 2. by the deeper and more oblique crescent of its aperture ; and 3. by its much larger umbilicus.

A perfect series of this very distinct species was sent us by our friend Mr. Alder of Newcastle, who first distinguished it. We also find it, not unfrequently, among fallen leaves and in ditches. It had doubtless been passed by as the young of some other species.

44. Helix *radiata*. Shell flattish, slightly carinate, deeply striate rufous-grey with chestnut rays.

b. quite flattened at top.

Helix rotundata. *Turt. Dict. p.* 53.

c. White, transparent, and without rays.

Helix radiata. *Montagu, p.* 431. *t.* 24. *f.* 3.
———— *Da Costa, p.* 57. *t.* 4. *f.* 15, 16.

Helix rotundata. *Drap. p.* 114. *t.* 8. *f.* 4—7.
———————— *Brard, p.* 51. *t.* 2. *f.* 10, 11.
Zonites radiatus. *Leach, Mollusc. p.* 102.

Shell about a quarter of an inch in diameter, nearly equally convex on both sides, slightly carinate, strongly and regularly striate across, yellowish or reddish-grey with chestnut rays from the centre: aperture semilunar, as wide as long, thin and not reflected: umbilicus large and deep.

Common under stones and wood.

45. Helix *rupestris*. Shell convex, somewhat trochiform, blackish-brown, opake, striolate: aperture nearly circular: umbilicus very large.

Helix rupestris. *Drap. p.* 82. *t.* 7. *f.* 7—9.
Zonites rupestris. *Leach, Mollusc. p.* 103.
Helix umbilicata. *Mont. p.* 434. *t.* 13. *f.* 2.

Shell the tenth of an inch in diameter, elevated on the upper side, with five rounded and deeply divided volutions, slightly striate, of an uniform deep opake deep chocolate brown: aperture nearly circular, being very little interrupted by the penultimate volution, the margin thin and not reflected: umbilicus funnel-form.

On elevated rocks, and under the top stones of walls and lofty buildings, always in dry places.

46. Helix *pygmæa*. Shell rather convex, pale chocolate brown, semitransparent: aperture semilunar: umbilicus large.

Helix pygmæa. *Drap. p.* 114. *t.* 8. *f.* 8—10.

Shell half the size of the last, of a pale and hardly transparent brown horn-colour, slightly striate, equally convex on both sides, with the apex usually whitish as if decorticated, with four well defined volutions: aperture roundish crescent-shaped, as long as it is wide.

Dr. Leach considers this as the young of the last species, from which it evidently differs in colour, appearance, and locality, as the two species are never found together. 1. it is much flatter and more transparent; 2. it has only four volutions; 3. the aperture is not so circular; 4. it is only found in ditches and wet places, among dead leaves.

47. Helix *fulva*. Shell rather conic and trochiform, with six volutions, dark horn-colour and glossy: aperture narrow crescent-shaped, umbilicus minute.

Helix fulva. *Drap. p.* 81. *t.* 7. *f.* 12, 13.
Teba fulva. *Leach, Mollusc. p.* 99.
Helix trochiformis. *Mont. p.* 427. *t.* 11. *f.* 9.
Helix Trochulus. *Dillwyn, p.* 916.

Shell the tenth of an inch in diameter, glossy, dark horn-colour, with six rounded volutions, which are much raised and strongly defined: the base prominent, with a depression in the centre forming an incipient umbilicus: aperture transverse, narrow, as high as broad with a very thin margin, reflected only near the depression, which in young shells is hardly visible.

In woods, among dead leaves.

A smaller variety is found among wet leaves in the neighbourhood of Bideford, of a more flattened form, making both the sides almost equally convex, and sloping to a slightly carinated edge, with only five volutions. It is the *Helix Mortoni* described by Mr. Jeffreys in his interesting Synopsis of the Testaceous Pneumonobranchous Mollusca of Great Britain; and may probably be specifically distinct.

48. Helix *Scarburgensis*. Shell somewhat trochiform, grey: the epidermis rising into close-set equal longitudinal lamellæ: umbilicus deep.

Shell the tenth of an inch in diameter, and as much high, grey or pale horn-colour, semitransparent, pyramidal, with very numerous regular longitudinal lamellæ not shooting in the middle into spinous projections: spire composed of six rounded and

deeply divided volutions, which very gradually decrease from the tumid and rounded base, the tip obtuse and usually of a whitish colour: aperture narrow crescent-shaped, wider than long, the margin thin and reflected over the umbilicus which is small and deep.

Like that of the *H. spinulosa*, the epidermis of this species rises into thin laminar foliations, which in various positions of light reflect a velvety or satin-like lustre; but the foliations are infinitely more numerous and compact, not shooting into spinous processes in the middle: the shape of the spire is also very different, not decreasing in a conical manner, but regularly pyramidal; and the aperture, instead of projecting forward in a semi-elliptic form, is narrow crescent-shaped, without the internal rib round the margin.

For this extremely beautiful and interesting acquisition, we are indebted to the diligence of Mr. Bean of Scarborough, who first discovered it in the woods near that place.

49. Helix *pulchella*. Shell opake-white or brownish, depressed, equally convex both sides: aperture nearly circular with the margin flat and reflected.

a. quite smooth and glossy.

Helix pulchella. *Drap. p.* 112. *t.* 7. *f.* 33, 34.
——————— *Brard, p.* 56. *t.* 2. *f.* 9.
Helix paludosa. *Mont. p.* 204.
——————— *Linn. Trans.* viii. *p.* 193. *t.* 5. *f.* 5.
Turbo paludosus. *Turt. Dict. p.* 228.
Zurama pulchella. *Leach, Mollusc. p.* 108.

b. with regular oblique raised transverse striæ.

Helix pulchella. *Drap. p.* 112. *t.* 7. *f.* 30—32.
Helix crenella. *Mont. p.* 441. *t.* 13. *f.* 3.

Shell the tenth of an inch in diameter: aperture nearly circular, being very little interrupted by the penultimate volution, the peritreme margined and flat: umbilicus large and deep.

Whether these two varieties may not be considered as distinct species, may still be doubted. In all the dry hills around us, under heaps of stones we find the first variety in abundance, but have never been able to discover one with the epidermis or transverse ridges. On the contrary, in marshy places we as constantly find the second variety with its striæ and epidermis, and never without them. At all events these circumstances will destroy the specific character adopted by Dr. Leach, "epidermide in lineas obliquè transversas elevatas digestâ." And we may further observe,

that these transverse elevations are not wholly obliterated by the removal of the epidermis. Draparnaud supposes that they are the vestiges of former peritremata or margins of the aperture.

50. Helix *brevipes*. Shell flattish, oblong, extremely thin, transparent and glossy, brownish-white when fresh: aperture vast, oval, and somewhat oblique: umbilicus deep.

Helix brevipes. *Drap. p.* 119. *t.* 8. *f.* 30—33.

Shell hardly the tenth of an inch in diameter, and may easily be mistaken for the young of *Vitrina*, but is distinguished by the following marks:—1. the animal is not so comparatively large, but is wholly contained in the shell: 2. the shell is perfectly formed, and furnished with a regular central umbilicus, is of a thicker consistence and of a whitish colour when dead. Draparnaud properly observes, that this and another similar species which he denominates *Helix rufa*, and which we have not yet discovered, form the natural boundary between the *Helix* and the *Vitrina*.

In woods and among leaves.

IX. CAROCOLLA.

Shell orbicular, depressed, equally convex on both sides, sharply carinated in its outer circumference: aperture transverse, oval; the peritreme united all round and margined: operculum none.

The aperture, which is placed underneath, and is quite perfect, not being interrupted by the convexity of the penultimate volution, distinguishes this from the *Helix* family.

In winter the mouth is closed up by a fine pellicle or film, near the centre of which is a minute orifice or spiracle for the purpose of respiration.

51. Carocolla *Lapicida*. Shell umbilicate, finely granulate, grey or pale rufous with reddish rays or spots.

Carocolla Lapicida. *Lamarck*, vi. ii. *p.* 99.
Helix Lapicida. *Linn. Mont.*
——————— *Drap. p.* 111. *t.* 7. *f.* 35—37.
——————— *Brard, p.* 53. *t.* 2. *f.* 14, 15.
Chilotrema Lapicida. *Leach, Mollusc. p.* 106.
Helix acuta. *Da Costa, p.* 55. *t.* 4. *f.* 9.

Shell three quarters of an inch in diameter, finely granulated: volutions five, the outer one sloping in both sides so as to form a sharp edge in the middle of the margin which runs spirally round the upper volutions and marks their separation by a fine line: umbilicus central, large and deep: aperture oval, with an indenture or small notch on the inside at the outer pointed extremity where the keel commences; the peritreme broad, thin, white, reflected, united and detached all round.

In the fissures of limestone rocks, and in woods.

X. AZECA.

Shell subcylindrical, rather obtuse: aperture pear-shaped, curved and pointed at the top; the margin thick, obtuse, and united all round: umbilicus none: operculum none.

In shape, colour, polish and habitat, this shell so exactly resembles the *Bulimus lubricus*, that some have questioned if this latter shell be not the same in its earlier stage of formation before the teeth appear: but the singular shape of the aperture decidedly removes it into a distinct genus, which is adopted from Dr. Leach.

52. Azeca *Matoni*. *Leach, Mollusc. p.* 122. *t.* 8. *f.* 8.
Turbo tridens. *Montagu, p.* 338. *t.* 11. *f.* 2.
——————— *Laskey, Wern. Soc.* i. *p.* 406. *t.* 8. *f.* 11.

a. with three teeth, one above and one on each side.

b. with two additional denticles, alternating with the larger one.

Shell two tenths of an inch long, and a third part

as broad, oblong or conico-cylindrical, brown horn-colour, semitransparent, quite smooth and glossy, except close to the sutures where there appear some fine longitudinal striæ: spire composed of seven flat and hardly raised volutions: aperture pear-shaped, curved and narrower at the upper and outer angle; the peritreme thickened and obtuse: umbilicus imperfect.

In woods, among decayed leaves.

XI. CLAUSILIA.

Shell reversed, with an elongated slender fusiform spire, the second volution more tumid than the first, obtuse or papillary at the summit: aperture oval, oblique, united all round and margined, toothed, and furnished with an internal spiral operculum.

The elegant spindle-shaped outline of this family having the lowest volution slenderer than the next, and being consequently more tumid above the aperture, fixes its distinction from the *Bulimus*. All our native species are reversed.

53. Clausilia *laminata*. Shell nearly smooth, glossy, and transparent: aperture with two white plaits: operculum emarginate.

a. dark chocolate-brown.
b. greenish-white and quite transparent.
c. with the internal laminæ notched.

Clausilia lamellata. *Leach, Mollusc. p.* 118.
Clausilia bidens. *Drap. p.* 60. *t.* 4. *f.* 5—7.
——————— *Brard, p.* 83. *t.* 3. *f.* 9.
Turbo laminatus. *Mont. p.* 359. *t.* 11. *f.* 4.

Shell half an inch long, of a glassy reddish horn-colour and nearly smooth: spire composed of twelve raised volutions: aperture roundish-oval with a white thick margin, attached at the upper part to the body volution, with two laminar folds, one of them straight and placed near the top of the aperture and almost central, the other curved and in the middle of the pillar lip, frequently crenate; and deep within the mouth are three or four permanent ridges which are visible on the back at the outside when held before a strong light.

In beech woods, among decayed leaves.

54. Clausilia *plicatula*. Shell ventricose, opake, with regular raised striæ: aperture with four or five plaits, two of which are larger.

a. with four plaits, the two middle ones less.
b. with five plaits, the three middle ones less.
c. with five plaits, the three lower ones less.

Clausilia plicatula. *Drap. p.* 74. *t.* 4. *f.* 17, 18.
——————————— *Brard, p.* 85. *t.* 3. *f.* 10.
Clausilia Rolphii. *Leach, Mollusc. p.* 119.

Shell an inch long, of a greyish-brown horn-colour, tumid in the middle: spire composed of ten or eleven rather swollen volutions which are marked

with regular raised longitudinal lines: aperture roundish-oval, sinuous at the upper and outer angle: the margin thick, white, detached all round, with four or five plaits, two of which are much longer than the rest.

Of so rare a shell it is not easy to collect all the varieties. Such as are above enumerated are in the author's cabinet. In every respect they answer to the accurate descriptions of Draparnaud and Brard.

Found by Mr. Rolph, in Charlton Wood, Kent, and latterly in other woods of the same county.

55. Clausilia *biplicata*. Shell ventricose, opake grey-brown, with regular raised striæ: aperture with two plaits, the margin detached all round.

b. with a minute additional denticle or two.

Clausilia biplicata. *Leach, Mollusc. p.* 120.
Clausilia ventricosa. *Drap. p.* 71. *t.* 4. *f.* 14.
Turbo biplicatus. *Mont. p.* 361. *t.* 11. *f.* 5.

Shell nearly three quarters of an inch long, dark grey, opake, regularly striate longitudinally: spire consisting of eleven or twelve rather flat but well-defined volutions; the suture a depressed line:

aperture oval, a little sinuous at the upper and inner angle, with two plaits, one near the top of the pillar lip, and the other not quite half way down, both of them approaching each other as they recede inwardly: the margin white and detached all round.

In woods and close hedges.

†56. Clausilia *bidens*. Shell very slightly striate, the suture crenate with white papillary dots: aperture with two plaits, and the margin detached all round.

Turbo bidens. *Linn. Syst. p.* 1240.
———————— *Linn. Trans.* viii. *p.* 178. *t.* 5. *f.* 3.
———————— *Pult. Dors. p.* 46. *t.* 21. *f.* 16.
Clausilia papillaris. *Drap. p.* 71. *t.* 4. *f.* 13.

Shell half an inch long, pale brown, finely striate obliquely, tumid in the middle: volutions nine or ten, the five or six smaller ones suddenly decreasing in size, and all marked by small white tubercles on a brown line which winds round the sutures, giving the line of junction a crenate appearance: aperture broad oval, with the margin rather thin, and detached all round; the outer lip with two rather remote laminæ, and often a small tubercle between them.

We have received this shell, as indigenous, from Wales and from Scotland, but as yet must consider it as a doubtful native.

†57. Clausilia *labiata*. Shell ventricose, greyish-white, with regular raised striæ hardly interrupted by the suture which is a small raised line: aperture two-toothed with a broad white flat margin.

Turbo labiatus. *Mont. p.* 362. *t.* 11. *f.* 6.
Strombiformis perversus. *Da Costa, t.* 5. *f.* 15.

Shell rather short and thick, with about nine volutions which are hardly raised from each other, with regular raised striæ which are scarcely interrupted by the line of junction, a thin raised line: aperture broad oval, with a protuberance near the top of the inner lip; the margin white, spread, flat and slightly reflected.

Our specimen, the only one we have ever seen, came from the cabinet of Mr. Sowerby, who expresses a doubt of its ever having been found in England, being a native of Malta.

58. Clausilia *rugosa*. Shell slender, opake, with fine raised somewhat granular striæ: aperture with three plaits, the margin white and detached all round.

b. smaller, slenderer, and not so distinctly striate.

c. with a small denticle or two between the plaits.

Clausilia rugosa. *Drap. p.* 73. *t.* 4. *f.* 19, 20.
——————— *Leach, Mollusc. p.* 121.
Turbo bidens. *Montagu, p.* 357. *t.* 11. *f.* 7.
Turbo nigricans. *Turt. Dict.* 225. *Dillw.* 375.

Shell about half an inch long, glossy black or grey, often marked with short cinereous streaks, with regular raised lines which when closely examined appear a little granular: spire composed of from seven to ten rather raised volutions: aperture oval, with the inner lip a little contracted with three plaits all on the pillar, the lower one interior and hardly distinguishable in the full-grown shell; the margin thick and white, but not reflected, detached all round.

Common under stones and in old walls.

59. Clausilia *parvula*. Shell very slender, brown, quite smooth: aperture with two plaits; the margin thick, white, slightly reflected, detached all round.

Clausilia parvula. *Turton, Zool. Journ.* 11. *p.* 556.
——————— *Jeffreys, Linn. Trans.* xvi. *p.* 352.
Clausilia minima. *Pfeiffer, t.* 3. *f.* 35.

Shell three eighths of an inch long, slender, of a dark brown, with nine volutions which are hardly raised, quite smooth, except the lower half of the lower volution which is sometimes slightly striate : aperture narrow oval, oblique, with the margin thick and white, and detached all round.

This is no doubt the shell mentioned by Leach, *Mollusc. p.* 121, as having been received from the Provost of Eton, but which in consequence of the imperfect formation of the mouth he was not able to characterize. Our most perfect specimen was taken at Torquay. It much resembles the *Cl. corrugata* of *Drap. p.* 70. *t.* 4. *f.* 11, 12, but is not half the size and has only nine volutions. We have also received specimens from Mr. Alder of Newcastle.

XII. BULIMUS.

Shell regular, oblong: the spire produced and ending rather acutely, with the ultimate volution larger than the next: aperture oval, entire at the base, without teeth, not half as long as the spire; the peritreme interrupted: operculum none.

This family is distinguished from the *Limneus* in wanting the oblique fold on the pillar; from the *Clausilia* in being regular, and in having the peritreme simple and interrupted; and from the *Pupa* in having the spire regularly tapering.

* *pupa edentula : pupa umbilicata.*

60. Bulimus *decollatus*. Shell oblong conico-cylindrical, with the spire abruptly truncate: umbilicus none.

Bulimus decollatus. *Drap. p.* 76. *t.* 4. *f.* 27, 28.
Helix decollata. *Linn. Syst. p.* 1247.

Shell an inch long, and hardly half as much wide, white, glossy, slightly striate longitudinally but more regularly towards the sutures; spire com-

posed of five or six very little raised volutions, terminating abruptly, as if many of the lower ones had been broken off by violence; the extremity closed: aperture oblong-oval, with hardly any umbilicus.

Young shells have a very obtuse summit, and appear to shed or exfoliate their ultimate volutions as they advance in age.

The earlier conchologists were not well agreed as to the cause of this singular truncation of the extremity. Linné considered it as a law of nature, because the upper extremity was always found closed up. Muller, on the contrary, declares he has full conviction that it is the effect of accident, and that it had previously existed in a perfect state. Murray agrees with Linné, observing that whenever a portion is broken from a spiral shell, that part is always left open. If this were the mere effect of accident, it would appear singular that all, at the same period of growth, should meet with the same accident, in the same portion of the shell. The probability is, that as the animal enlarges in its growth, it gradually recedes from the smaller volutions, closing them up, joint after joint, in its retreat, leaving these neglected portions without vascular connexion, and subject to exfoliation like the leaves of a deciduous tree, or like the shedding of teeth.

In the greenhouse at Watton in the County of Devon, the seat of H. Studdy, Esq., a colony of this singular species was for many years known to breed in great abundance, lodged in the earth under the wood-work, whence they wandered abroad in the summer. No foreign earth was ever known to have been admitted into the house; and they were considered by the gardeners as natives. Some time since, this wood-work and the earth were removed and replaced by stone; and all that were preserved we owe to the diligence of Mrs. Griffiths and Miss Hill.

†61. Bulimus *Clavulus*. Shell subulate, white, glossy, pellucid, striate longitudinally: umbilicus minute.

Shell a quarter of an inch long, and not an eighth broad, slender and tapering to a rather obtuse point, glossy white with a slight yellowish tinge, transparent and striate longitudinally: spire composed of seven or eight rather swollen and well defined volutions: aperture oval-oblong, the margin thin and reflected at the pillar so as to form a distinct but small umbilicus.

Mr. Sowerby, in his "Genera", considers this as a species of *Achatina*; but the base of the pillar

is well rounded, without the least appearance of truncation.

Found abundantly and constantly in pine-beds, in the neighbourhood of Bristol, by Mr. Millar.

62. Bulimus *montanus*. Shell conic-oblong, reddish-brown, obliquely striolate; the peritreme reflected and forming an umbilicus.

b. whitish horn-colour, and transparent.

Bulimus montanus. *Drap. p.* 74. *t.* 4. *f.* 22.
Ena montana. *Leach, Mollusc. p.* 112.
Helix Lackhamensis. *Mont. p.* 394. *t.* 11. *f.* 3.

Shell five eighths of an inch long, and a quarter of an inch wide, deep chocolate brown varying to light grey, conically elongated: spire consisting of seven slightly raised but well-defined volutions ending in a rather acute point, irregularly and obliquely striate longitudinally, and when magnified having the appearance of a shagreen-like roughness: aperture oblong-oval, with the peritreme chocolate brown and reflected, forming an umbilicus behind the pillar.

In beech woods, among decayed leaves.

63. Bulimus *obscurus*. Shell oval-oblong, brown, with the peritreme white and reflected, forming a small umbilicus.

Bulimus obscurus. *Drap. p.* 74. *t.* 4. *f.* 23.
——————— *Brard, p.* 97. *t.* 3. *f.* 19.
Ena obscura. *Leach, Mollusc. p.* 113.
Helix obscura. *Montagu, p.* 391. *t.* 22. *f.* 5.
Turbo Rupium. *Da Costa, p.* 90.

Shell half an inch long, and about a third as much broad, brown or horn-colour, semitransparent: spire composed of six or seven raised volutions, slightly striate longitudinally: aperture oblong-oval, with the margin white and reflected, forming a slight umbilicus behind the pillar.

Except in size it is not easy to form a very distinctive character between this and the last species; but this is of a paler brown, with the volutions more rounded, and the peritreme is white.

In woods and old walls, and under stones.

64. Bulimus *tuberculatus*. Shell oval-oblong whitish-brown, white and slightly umbilicate at the base: margin of the aperture white and somewhat reflected, with a single tubercle at the upper and outer angle.

Bulimus tuberculatus. *Turton, Zool. Journ.* i. *p.* 363. *t.* 13. *f.* 4.

Shell in size between the two last, and varying from milk-white to brownish-white in colour; but the lower half of the larger volution is always milk-white as well as the margin of the aperture: volutions six, flat but well defined. It is remarkable for the tubercle on the pillar.

Woods about Pershore in Worcestershire.

65. Bulimus *lubricus.* Shell cylindrico-oblong, quite smooth, glossy and semitransparent: the peritreme thick, without umbilicus.

Bulimus lubricus. *Drap. p.* 75. *t.* 4. *f.* 24.
———————— *Brard, p.* 98. *t.* 3. *f.* 20.
Zua lubrica. *Leach, Mollusc. p.* 114.
Helix lubrica. *Mont. p.* 390. *t.* 22. *f.* 6.
Helix subcylindrica. *Dillwyn, p.* 952.
Turbo glaber. *Da Costa, p.* 87. *t.* 5. *f.* 18.

Shell hardly a quarter of an inch long, and a third of its length broad, of a glossy brown or horn-colour, with often a reddish tinge, quite smooth and polished: spire composed of five or six raised volutions: aperture narrow-oval, with the

margin thick and not reflected, often of a rosy colour.

Under stones and among moss and grass.

66. Bulimus *lineatus*. Shell cylindrical, obtuse, glossy brown, transparent, with rather distant parallel oblique longitudinal striæ.

Auricula lineata. *Drap. p.* 57. *t.* 3. *f.* 20, 21.
Carychium lineatum. *De Férussac, Mollusc.*
Turbo fuscus. *Walker, fig.* 42. *Turt. Dict.* 229.

a. dark chestnut brown.
b. pale yellowish-white.

Shell the tenth of an inch long, of a cylindrical form, and hardly decreasing in diameter for its whole length, highly polished and marked with rather remote regular longitudinal striæ which are hardly distinguishable without a good glass: spire composed of six very slightly raised but well-defined volutions; the two terminal ones of which are smaller and paler: aperture roundish-oval, with the margin thin, and a little reflected at the pillar, where it forms a slight perforation.

In consequence of the two lower tentacula being so

obsolete as to be scarcely discernible, it has by the continental writers been placed in various genera.

In wet moss, and decayed wood, not uncommon.

67. Bulimus *fasciatus*. Shell oblong, rather acute, coarsely wrinkled or striate, generally whitish with brown streaks or bands.

a. white without marks.
b. white with a single band on the large volutions only.
c. whitish with the band continuing round the base of all the volutions.
d. whitish, with brown longitudinal streaks.
e. brown, with white longitudinal streaks.

Elisma fasciata. *Leach, Mollusc. p.* 109.
Bulimus acutus. *Drap. p.* 77. *t.* 4. *f.* 29, 30.
Turbo fasciatus. *Mont. p.* 346. *t.* 22. *f.* 1.
Helix bifasciata. *Turton, Dict. p.* 63.
Helix acuta. *Dillwyn, p.* 956.

Shell half an inch or rather more in length, and about a third as much broad, oblong, semitransparent, variously marked, but always coarsely wrinkled longitudinally, and sometimes of a greyish colour

with white longitudinal streaks : spire consisting of from nine to twelve somewhat rounded volutions, ending rather acutely : aperture oval, longer than wide : the peritreme reflected and forming a slight perforation at the pillar.

Common on sandy maritime pastures.

68. Bulimus *articulatus*. Shell conic, ventricose at the base, white, with longitudinal stripes of chain-like brown spots.

Bulimus articulatus. *Lamarck*, vi. ii. 124.

Shell five eighths of an inch long, and three eighths broad, quite conic, and so abrupt at the base of the lower volution, as to have the appearance of being somewhat carinated : colour whitish, glossy, with numerous longitudinal rows of pale brown chain-like spots, resembling figures-of-eight linked together : the tip black-brown : on the back of the lower volution are two brown narrow bands, one of which penetrates the aperture, and the other is continued round the junction of the sutures : spire consisting of ten very little raised volutions : aperture roundish-oval, as wide as it is long, with the margin reflecting over the pillar and forming an umbilicus.

A few of this very beautiful and distinct species were sent us from the plains about Penzance in Cornwall.

69. Bulimus *ventricosus*. Shell conic, ventricose at the base, white with a dark brown band round all the volutions.

Bulimus ventricosus. *Drap. p.* 78. *t.* 4. *f.* 31, 32.
——————————— *Lamarck*, vi. ii. *p.* 125.

Shell about two thirds as long as the *B. fasciatus* or any of its varieties, with the last volution more ventricose in proportion: colour white, with two very dark brown bands on the lower volutions, one of which winds round all the rest to the tip, and is often interrupted by white streaks: aperture as broad as long, the margin reflected over the pillar, and forming a small perforation.

The three last species, as Draparnaud observes, form a connecting link between the *Helix* and the *Bulimus*, and might with propriety form a distinct genus; the wrinkled or creased surface forming a prominent character.

Found with the last.

XIII. BALÆA.

Shell reversed, thin, with an elongated taper spire, the last volution larger than the next: aperture roundish-oval, entire at the base, oblique, with or without a single tooth on the pillar: operculum none.

From the *Bulimus* and the *Pupa* this genus is distinguished by the aperture being left-handed; from the *Clausilia*, in having the ultimate volution proportionately larger than the next; and from the *Vertigo*, in the regularity of its peritreme.

70. Balæa *fragilis*. Shell rather linear-oval, transparent, yellowish.

Balæa fragilis. *Leach, Mollusc. p.* 116.
Balea fragilis. *Grey, Zool. Journ.* i. *p.* 61.
Pupa fragilis. *Drap. p.* 68. *t.* 4. *f.* 4.
Turbo perversus. *Mont. p.* 335. *t.* 11. *f.* 12.

Shell about a quarter of an inch long, slender and tapering to a rather sharp point, transparent, yellowish horn-colour, slightly striate longitudinally: spire consisting of from six to nine raised and well-

defined volutions: aperture roundish-oval: the peritreme thin, simple and a little reflected at the pillar so as to form a slight umbilicus. In old and full-grown shells may be observed a slight fold or tooth about the middle of the pillar, but which is seldom to be met with.

On the trunks of trees, under the bark, and imbedded in the Lichen which grows on old apple-trees: also in the fissures of rocks.

XIV. ACHATINA.

Shell oval-oblong, or somewhat cylindrical, obtuse at the tip: aperture longitudinal, oval, entire at the base; the outer lip thin, and never reflected: pillar smooth, simple, truncate at the base: operculum none.

The abruptly truncated termination of the pillar or outer lip will immediately distinguish this genus from the *Bulimus*, to which it is in other characters so nearly allied.

71. Achatina *Acicula*. Shell slender, smooth, polished, white, with six flat volutions: the lower one as long as all the others.

Achatina Acicula. *Lam.* vi. ii. *p.*133.
Bulimus Acicula. *Drap. p. 75. t. 4. f. 25, 26.*
———————— *Brard, p.* 100. *t. 3. f.* 21.
Buccinum terrestre. *Mont. p.* 248. *t.* 8. *f. 3.*
Buccinum Acicula. *Dillwyn, p.* 652.

Shell not a quarter of an inch long, taper: aperture oval-oblong, appearing as if cut off at the base,

giving the end of the pillar the resemblance of a tooth; the outer margin thin, not reflected nor forming an umbilicus.

Pfeiffer in his delineation of this shell, *part* 1. *tab.* 3. *fig.* 8, 9. has erroneously exhibited the aperture as quite rounded at the base, without the least detruncation of the pillar, thereby fixing it in the genus *Bulimus*.

Among the roots of trees, at the base of limestone rocks.

†72. Achatina *octona*. Shell smooth, polished, somewhat cylindrical white horn-colour, with seven or eight roundish volutions; the lower one not half so long as all the rest.

Bulimus octonus. *Lam.* vi. ii. *p.* 124.
Helix octona. *Mont. Turt. Dict.*
———— *Linn. Trans.* viii. *t.* 5. *f.* 10.

Shell half an inch long, with seven or eight raised and rounded volutions: aperture roundish, terminating like the last, which fixes it in this genus.

Inserted as British, on the authority of Dr. Pulteney, but a very doubtful native.

XV. SUCCINEA.

Shell oval-oblong, thin, with a very short conic spire: the lower volution very large: aperture ample, longitudinal, oblique, entire at the base, with the margin disunited at top: umbilicus none: operculum none.

73. Succinea *amphibia*. Shell oblong-oval, smooth, glossy and transparent, reddish amber-colour: aperture oblong-oval.

Succinea amphibia. *Drap. p.* 58. *t.* 3. *f.* 22, 23.
——————————— *Brard, p.* 72. *t.* 3. *f.* 1.
——————————— *Sowerby, Gen. f.* 3.
Succinea Mulleri. *Leach, Mollusc. p.* 78.
Helix succinea. *Turt. Dict. p.* 67.
Helix putris. *Mont. p.* 376. *t.* 16. *f.* 14.
Helix limosa. *Dillwyn, p.* 965.

Shell three quarters of an inch long, and about half as much broad, of a greenish, amber or orange-yellow colour, very thin and transparent: spire composed of three volutions; the first extremely

large and inclining a little obliquely; the two upper ones very small, and ending rather obtusely: aperture covering three fourths of the shell: pillar spiral, visible internally to the end or apex.

In marshes, on aquatic plants.

74. Succinea *oblonga*. Shell oval, slightly striate, reddish horn-colour: aperture oval, with the sutures distinct.

Succinea oblonga. *Drap. p. 59. t. 3. f. 24, 25.*

Shell about half the size of the last, of a more oval shape, with the volutions more distinct.

Found with the last.

XVI. CYCLOSTOMA.

Shell oval or oblong, not clothed with an epidermis: aperture circular or nearly so, without teeth; the peritreme united all round: operculum horny, marked with a single depressed spiral line.

This genus is distinguished from the *Paludina* in having only a single spiral line on the lid; from the *Valvata* in wanting an epidermis; and from both in being a land shell, and never found immersed in water.

75. Cyclostoma *elegans*. Shell conic-oval, with raised spiral striæ; and the peritreme attached at its upper part.

Cyclostoma elegans. *Drap. p.* 32. *t.* 1. *f.* 5—8.
——————————— *Brard, p.* 103. *t.* 3. *f.* 7, 8.
Cyclostomus elegans. *De Montfort*, ii. *p.* 287.
Turbo elegans. *Mont. p.* 342. *t.* 22. *f.* 7.
Turbo striatus. *Da Costa, p.* 86. *t.* 5. *f.* 9.

Shell half an inch long, and four tenths of an inch wide, solid, grey or purplish-yellow, mostly purple

at the tip, often marked with two rows of purplish brown spots: spire composed of five rounded volutions, marked with numerous close-set raised spiral striæ and finer longitudinal ones between them; aperture round with a small angle at top, and an umbilicus behind the pillar: operculum hard and horny, marked with a single depressed spiral line, from which some very fine striæ radiate towards the circumference.

In hedges and under stones.

76. Cyclostoma *productum*. Shell oblong-conic with raised spiral striæ; and the peritreme detached all round.

Cyclostoma sulcatum. *Drap. p. 33. t. 13. f. 1?*

Shell three quarters of an inch long, and a little more than half an inch broad, with six volutions, the three smaller ones of which are nearly smooth: colour pale straw-yellow. From the last species it differs in the following particulars:—1. it is much more elongated in proportion to its breadth: 2. the spiral striæ are much stronger, more remote, and fewer in number, being only twenty-two on the larger volution, whereas in the *C. elegans* there

are thirty-two, and consequently closer together: 3. the umbilicus is not so well defined: and, 4. the margin of the aperture is detached all round, and not joined at its upper end to the penultimate volution.

We found a single specimen near the sea-coast, in the west of Ireland.

XVII. CARYCHIUM.

Shell spiral, conic: aperture toothed, lateral, compressed, rather oblique and somewhat ear-shaped, with both the ends rounded: the peritreme interrupted, margined and obtuse: umbilicus none: operculum none.

77. Carychium minimum. *Leach, Mollusc. p.* 133.

Auricula minima. *Drap. p.* 57. *t.* 3. *f.* 18, 19.

Turbo Carychium. *Mont. p.* 339. *t.* 22. *f.* 2.

Shell hardly the tenth of an inch long, conic, white with a yellowish cast, transparent: spire composed of five rounded volutions, very finely striate longitudinally, and ending rather obtusely: aperture semioval or rather ear-shaped, rounded at both the angles, with two teeth in the pillar, and sometimes a small one above the others; the margin thick, and in the middle of the outer lip a thick tooth-like protuberance.

On ead wood, and wet leaves.

PUPILLADÆ.

Shell turrited in a more or less cylindrical shape, and ending in an abruptly obtuse manner: aperture roundish-oval, mostly toothed internally, truncate at the upper end, where the margin is disunited, with the sides of nearly equal length.

18. Pupa. || 19. Vertigo.

XVIII. PUPA.

Shell cylindrical, abruptly obtuse, the lower volution not more inflated than the next: aperture semi-oval, mostly toothed internally; the peritreme interrupted and truncate at the upper part, slightly margined and reflected: operculum none.

78. Pupa *umbilicata*. With a single laminar tooth united to the upper angle of the outer lip: peritreme with a white flat reflected margin.

Pupa umbilicata. *Drap. p.* 62. *t.* 3. *f.* 39, 40.

Pupilla Drapernaudii. *Leach, Mollusc. p.* 126.
Turbo Muscorum. *Mont. p. 335. t. 22. f. 3.*
Turbo cylindraceus. *Da Costa, p.* 89. *t. 5. f.* 16.

b. with the tooth obscure or obliterated.

Shell two lines long, dark horn-colour, glossy and semitransparent: spire composed of six rounded volutions finely striate longitudinally: aperture roundish-oval, with a broad, flat glossy white margin, and a single tooth which is parallel with the margin and close to the outer lip, appearing like a curved continuation of the margin itself: pillar with a large deep perforation behind it.

This does not appear to be the *Turbo Muscorum* of Linné, who describes it as having no tooth in the aperture, "apertura edentula": and no where mentions the remarkable broad white margin.

Under stones, and in old walls.

79. Pupa *marginata*. With a single minute interior central tooth, and a strong white external rib behind the outer lip.

b. with the tooth obliterated.

Pupa marginata. *Drap. p.* 61. *t. 3. f.* 36—38.
——————— *Brard, p. 93. t. 3. f.* 15, 16.

Pupilla marginata. *Leach, Mollusc. p.* 127.
Turbo Chrysalis. *Turt. Dict. p.* 220.

Shell the tenth of an inch long, brown or yellowish horn-colour: spire composed of six or seven rounded and slightly striate volutions: aperture semicircular, with generally a small tubercular tooth placed in the middle and deep within the mouth, but which is sometimes very obscure and often totally wanting: peritreme thin, not margined, but slightly reflected and forming an umbilicus; and behind the outer lip is a thick white rounded rib.

Under stones, in pastures near the sea.

80. Pupa *edentula*. Shell conic-oval, with five or six volutions: aperture semicircular, without tooth; the peritreme simple, without margin or rib: umbilicus minute.

b. more elongated and cylindrical.

Pupa edentula. *Drap. p.* 59. *t.* 3. *f.* 28, 29.

Shell the tenth of an inch long, horn-colour, transparent, slightly striate: spire composed of five or six rounded and deeply divided volutions: aperture with a very thin margin, without the rib behind the outer lip.

Montagu was acquainted with this shell, but had not fixed it as a distinct species. At page 336 of his *Testacea*, in describing the *Turbo Muscorum*, he observes, "that in company with it is sometimes found, what must at present be considered as a variety: it is not above half so large, with the same number of volutions, and is exactly similar in shape, but the aperture is not marginated, and it is always destitute of the tooth."

And as this, and perhaps some other distinct species, may be passed by as the young of *Pupa umbilicata*, it may be proper to point out, that the unformed shell of the last-mentioned species may in every stage of growth be distinguished by a fine white laminar line, in the middle of the mouth, which worms round the volutions to the very apex. This line is a continuation of the tooth, and may also be observed in the young of the *Vertigo anglica*.

It is very probable that this is the true *Turbo Muscorum* of Linné, as it most accurately answers his description in the *Systema Natura*. "Testa ovata obtusa pellucida, anfractibus senis secundis, apertura edentula."

In woods, under stones, not uncommon.

XIX. VERTIGO.

Shell conico-cylindrical, abruptly obtuse: aperture contracted at the base, more or less angular, or having the outer margin contracted, toothed internally; the peritreme slightly margined and reflected, interrupted and truncate at top: operculum none.

81. Vertigo *Secale*. Aperture with seven or eight laminar teeth: the peritreme acute and slightly reflected.

Turbo Juniperi. *Montagu, p.* 340. *t.* 12. *f.* 12.
Pupa Secale. *Drap. p.* 64. *t.* 3. *f.* 49, 50.
Abida Secale. *Leach, Mollusc. p.* 165.

Shell a quarter of an inch or rather more in length, of a greyish-brown colour, opake, obliquely striate longitudinally: spire composed of eight or nine rounded volutions: aperture with seven or eight laminar teeth; two on the pillar-lip; three on the outer-lip, including the central one, and all of which are visible on the back in the appearance of three pale bands; two on the interrupted part of the peritreme, the outer one of which is more prominent

and close to the margin, with often a tubercle on its outside.

The distortion of the peritreme clearly places this species among the vertiginous or wry-mouthed tribe of the *Pupilladæ*.

82. Vertigo *Anglica*. Aperture five-toothed: the peritreme flattened and reflected.

Vertigo Anglica. *De Férussac, Mollusc.*

Shell two lines long, and half as much broad, dark chocolate-brown with often a greyish cast, especially towards the point, opake, faintly striate longitudinally: spire composed of six or seven slightly raised volutions: aperture semielliptic, with a tubercular projection near the top of the outer lip, and five teeth; two at the base, one of them small and tubercular, one central at the top; one at the top of the outer angle, parallel with and united to the peritreme, curving so as nearly to meet the marginal tubercle, and form a circular inclosure; and an oblique one on the pillar: peritreme flat, brown, reflected, with a strong umbilicus behind the pillar.

In the half-grown shell, the teeth appear round the circumference of the base, nearly at equal distances, like pieces of white enamel.

Discovered by Mr. Bean, in woods near Scarborough, in Yorkshire ; and lately by Mr. Alder, in various localities of the neighbourhood of Newcastle.

83. Vertigo *pygmæa*. Aperture with five teeth ; one of which is superior and central between the lips of the peritreme : the peritreme acute.

Vertigo vulgaris. *Leach, Mollusc. p.* 129.
Pupa pygmæa. *Drap. p.* 60. *t.* 3. *f.* 30, 31.

Shell a line long, dark brown semitransparent : spire, composed of five rounded and nearly smooth volutions : aperture somewhat triangular, with usually five teeth, two on each lip, and a central one on the upper part ; peritreme thin, whitish when the shell is perfect, slightly reflected and forming an umbilicus, with a longitudinal external rib on the outer lip.

On the dry barren hills about Torquay, plentifully, under stones.

84. Vertigo *sexdentata*. Aperture with six teeth, two of which are superior and placed between the lips of the peritreme.

Turbo sexdentatus. *Mont. tab.* 12. *fig.* 8.

Shell somewhat smaller than the last and of a more conical shape, with the volutions more rounded and better defined; and may be readily known by the two distinct teeth on the surface between the two lips on the upper part of the aperture, the right tooth much the larger.

Distinguished and sent to us by Mr. J. Alder, from Newcastle; and by Mr. Bean from Scarborough.

85. Vertigo *palustris*. Shell oval, ventricose: aperture with eight unequal teeth, three of which are superior and between the lips of the peritreme.

Vertigo palustris. *Leach, Mollusc. p.* 128. *t.* 8. *f.* 10.
Pupa antivertigo. *Drap. p.* 60. *t.* 3. *f.* 32, 33.

b. Aperture with an additional tubercle.

Shell smaller than the last, of a deep chestnut-brown colour, with the margin of the aperture whitish: teeth three above and three below and one on each side, and often a ninth tubercular tooth.

It may easily be distinguished by the three very discernible white teeth of unequal size within the upper and truncated part of the aperture; whereas there is only a single central one apparently visible

in the same position, in *V. pygmæa;* and two in *V. sexdentata.*

Found in marshy situations in the neighbourhood of Scarborough: whence we have received specimens from our valuable correspondent Mr. Bean.

86. Vertigo *heterostropha.* Aperture reversed, 7-toothed, with a rib behind the outer lip.

Vertigo heterostropha. *Leach, Mollusc. p.* 130.
Pupa Vertigo. *Drap. p.* 61. *t.* 3. *f.* 34, 35.
Turbo Vertigo. *Mont. p.* 363. *t.* 12. *f.* 6.

Shell half a line long, pale chestnut-brown, semi-transparent, striolate: spire composed of five much rounded volutions: aperture reversed, somewhat triangular, obliquely truncate, with the peritreme thin, white and slightly reflected, forming an umbilicus behind the pillar: behind the outer lip is a longitudinal rib, and two or three transverse pale lines, being the reflection of the internal teeth: teeth two above, and five round the mouth, with sometimes an eighth tooth on the pillar-lip.

In the woods about Scarborough, not uncommon: whence we have received it from Mr. Bean.

C. UNIVALVE *Amphibious or Fresh-water Shells.*

LIMNADÆ.

Shell thin, glossy, without operculum; the margin of the outer lip always acute and never reflected.

20. Planorbis.	22. Limneus.
21. Segmentina.	23. Physa.

XX. PLANORBIS.

Shell orbicular, flat, disk-like; the volutions coiling horizontally round each other and visible on both sides; aperture lateral, oval or crescent-shaped, mostly interrupted by the penultimate volution: operculum none.

† The outer volution carinated.

87. Planorbis *carinatus*. Shell horn-colour, transparent, striate, nearly flat on both sides, with a prominent obtuse keel in the middle.

Planorbis carinatus. *Drap. p.* 46. *t.* 2. *f.* 13, 14, 16.
——————— *Brard, p.* 150. *t.* 6. *f.* 3.
Helix planata. *Linn. Trans.* viii. *p.* 189. *t.* 5. *f.* 14.
Helix Planorbis. *Turt. Dict. p.* 45.

Shell hardly half an inch in diameter, with five volutions, the outer one growing suddenly larger, a little depressed on the upper side, and nearly flat on the under: colour pale horn-colour and transparent, often covered with a brownish coat: aperture contracted to a point above in consequence of the keel.

In stagnant waters.

88. Planorbis *marginatus*. Shell horn-colour, brown, semitransparent, striolate, a little concave above, and flatter beneath, with a prominent obtuse keel placed near the base.

b. with the keel very obscure.

Planorbis marginatus. *Drap. p.* 45. *t.* 2. *f.* 11, 12, 15.
——————— *Brard, p.* 152. *t.* 6. *f.* 5.
Helix Planorbis. *Linn. Syst.* i. 1242.
Helix complanata. *Mont. p.* 450. *t.* 25. *f.* 4.

Shell resembling the last, but is more concave above, and flatter underneath in consequence of the keel

being placed near the base: and the aperture is more rounded at top.

c. with the volutions elevated into a spiral cone.

Helix Terebra. *Turt. Dict. p.* 62. *fig.* 55.

In stagnant waters, and slow rivers.

89. Planorbis *complanatus*. Shell glossy, transparent, striolate, concave above, with the outer volution very convex and abruptly larger, and a strong prominent obtuse keel near the base, flat beneath.

Planorbis Sheppardi. *Leach. Mollusc. p.* 149.
Helix complanata. *Linn. Syst.* 1242.

Shell seldom above half the size of the last, and is readily distinguished by the above characters.

In slow rivers, in Suffolk and Devon.

90. Planorbis *rhombeus*. Shell dark horn-colour, flattish above, rather convex beneath, with four volutions; the outer one comparatively larger, with a sharp keel near the base.

Helix rhombea. *Turt. Dict. p.* 47.

Shell about half an inch in diameter, rather thick, brownish or purplish horn-colour, striolate: spires four, the outer one much larger in proportion, and faintly carinated near the base: aperture somewhat rhombic, a little oblique, not quite so high as wide. The carinated side is never a prominent rim, as in *Pl. marginatus*, and is sometimes very obscure.

In slow streams, near Torquay in Devon.

91. Planorbis *Vortex*. Shell brown, slightly concave above and flat underneath, with six or seven gradually increasing volutions, the outer one with a sharp keel near the base.

Planorbis Vortex. *Drap. p.* 44. *t.* 2. *f.* 4—7.
———————— *Brard, p.* 154. *t.* 6. *f.* 9.
Helix Vortex. *Mont. p.* 454. *t.* 25. *f.* 3.
Helix Planorbis. *Da Costa, p.* 65. *t.* 4. *f.* 12.

Shell three eighths of an inch in diameter, very flat and thin, with six or seven gradually increasing volutions, slightly concave above, and quite flattened underneath so as to form a sharp edge round the outer volution: aperture a little angular.

In stagnant waters, common.

92. Planorbis *planatus*. Shell whitish, striolate, a little concave on both sides, the outer volution with a sharp carinated edge in the middle.

Helix carinata. *Mont. p.* 451. *t.* 25. *f.* 1.
Planorbis spirorbis. *Drap. p.* 45. *t.* 2. *f.* 8, 9, 10.
——————— *Leach, Mollusc. p.* 153.

Shell not a quarter of an inch in diameter, pale horn-colour when fresh, but generally found of a dull opake white, with four or five volutions, which gradually sink at the centre on both sides, but rather more beneath ; the outer one proportionately larger, a little convex and equally sloping on both sides to a sharp but not prominent edge : aperture heart-shaped, acute at the top.

This is a rare shell, and has not been well understood. Montagu has properly described it, observing that the outer volution slopes gradually to a sharp carinated edge. The *H. Spirorbis* of Linné it cannot be, for he remarks that it has not the least appearance of keel, "anfractibus quinque teretibus," and again "minime marginatis."

In slow streams, but rarely.

93. Planorbis *fontanus*. Shell dark horn-colour, smooth, glossy, very convex above, flat and um-

bilicate beneath; the outer volution subcarinated near the middle.

Planorbis complanatus. *Drap. p. 47. t. 2. f. 20—22.*
——————————— *Brard, p. 161. t. 6. f. 4.*
Helix fontana. *Montagu, p. 462. t. 6. f. 6.*

Shell not a quarter of an inch in diameter, of a dark or whitish horn-colour, very convex above with the centre flattened, flat beneath with a central umbilicus; the outer volution slightly but rather sharply carinate near the middle.

In clear stagnant waters.

94. Planorbis *imbricatus*. Shell flat above, umbilicate beneath, with a spinous ridge round the outer volution: aperture oval, united all round.

Planorbis imbricatus. *Drap. p. 44. t. 1. f. 49—51.*
——————————— *Brard, p. 163. t. 6. f. 10, 11.*
Helix nautileus. *Mont. p. 464. t. 25. f. 5.*
Turbo nautileus. *Linn. Turt. Dict. p. 227.*

b. with the transverse laminæ remote, and the shell smaller.

Planorbis cristatus. *Drap. p. 44. t. 2. f. 1—3.*

c. with the transverse laminæ obliterated.

d. with the volutions detached and raised above each other.

Shell the tenth of an inch in diameter, of a blackish or greenish horn-colour, with three volutions; the epidermis raised into numerous transverse ridges which form a spinous crest round the outer margin: aperture roundish-oval, united all round, and often detached from the second volution at its narrower end.

The variety d. is twice as large as others, and is remarkable in having the volutions produced, detached, and placed obliquely on each other. It has been noticed both by Brard, p. 164. and by Geoffroy.

In ponds and ditches, on aquatic plants.

†† The outer volution rounded and without keel.

95. Planorbis *corneus*. Shell deeply umbilicate above, nearly flat underneath: aperture semicircular.

Planorbis corneus. *Drap. p.* 43. *t.* 1. *f.* 42—44.
———————— *Brard, p.* 147. *t.* 6. *f.* 1, 2.
———————— *Sowerby, Genera, fig.* 1.
Helix cornea. *Linn. Mont. Turton.*

Shell an inch in diameter, thick, usually of a rusty-brown colour above and whitish underneath, obliquely striate: volutions five, the outer one rounded, with a deep umbilicus on the upper side exposing three of the volutions; under surface a little concave and whitish: aperture rather oblique, rounded, as high as broad.

In muddy streams and ditches.

96. Planorbis *contortus*. Shell nearly flat above, deeply umbilicate beneath: aperture very narrow crescent-shaped.

Planorbis contortus. *Drap. p.* 42. *t.* 1. *f.* 39—41.
——————————— *Brard, p.* 157. *t.* 6. *f.* 12—14.
Helix contorta. *Mont. p.* 457. *t.* 25. *f.* 6.

Shell about two tenths of an inch in diameter, and one tenth in thickness, brown horn-colour, and when free from accidental incrustations exhibiting in water a bronzed or gilt lustre: volutions five, remarkably compact and equal in size; the under surface with a large and deep umbilicus: aperture very narrow crescent-shaped, wider than high, not produced on either side.

97. Planorbis *albus*. Shell concave on both sides, with fine raised hispid spiral striæ.

Planorbis albus. *Leach, Mollusc. p.* 156.
Planorbis hispidus. *Drap. p.* 43. *t.* 1. *f.* 45—48.
——————— *Brard, p.* 159. *t.* 6. *f.* 6, 7.
Helix alba. *Mont. p.* 459. *t.* 25. *f.* 7.

Shell about a quarter of an inch in diameter, very thin and brittle, pale horn-colour, marked with very fine close-set raised circular striæ, which are clothed with deciduous bristles, and crossed with obscure longitudinal lines: volutions five, the first very large and rounded; the upper surface a little sunk in the middle, the under side more strongly concave: aperture roundish-oval, dilated, higher than wide, with the upper angle much produced.

When quite fresh, this beautiful species is clothed with a fine velvety pile composed of short points seated on the raised concentric striæ, and which fall off with the epidermis; and in its depilated state may be the *Helix Spirorbis* of Linné, as he no where also mentions so very common a species, Gmelin having probably quoted it twice, both as *H. Spirorbis* and *H. alba*. In this state it answers well to his character of *H. Spirorbis*, in the *Fauna Suecica*, "testa utrinque concava, plana, albida: anfractibus quinque teretibus."

Dr. Leach erroneously quotes Draparnaud's *Pl. Spirorbis* for this species.

In stagnant waters, on aquatic plants.

98. Planorbis *Spirorbis*. Shell thin, brown, slightly concave on both sides, with six gradually increasing and nearly equal volutions.

Planorbis Spirorbis. *Brard, p.* 156.
Helix Spirorbis. *Mont. p.* 455. *t.* 25. *f.* 2.

Shell in flatness and compactness of volutions much resembling the *Pl. Vortex*, but is less and has only six volutions; the under surface is a little concave in consequence of the volutions being rounded, and the outer one not flattened into a carinated edge; and the aperture is rounded at the upper end. Probably only a variety.

In ponds and canals.

A very minute species, apparently of this genus, is found among drifted sand at Tenby and Falmouth. It is slightly concave on both sides, without umbilicus, of three volutions, and marked with regular raised transverse striæ. It may have been brought down by fresh-water currents; but having, as yet, never been found on land, nor alive, its generic affinity must be left for future investigation.

XXI. SEGMENTINA.

Shell orbicular, somewhat discoid: aperture oval, semiconcamerated within; the partitions transverse, and resembling a triradiate opening.

99. Segmentina nitida. *Flem. Edinb. Encyclop.* vii.

Planorbis nitidus. *Drap. p.* 46. *t.* 2. *f.* 17—19.
Hemithalamus. *Leach, Mollusc. p.* 137.
Nautilus lacustris. *Mont. p.* 191. *t.* 6. *f.* 3.

Shell hardly a quarter of an inch in diameter, highly polished and smooth, of a chestnut or reddish-brown colour, flattish and semitransparent: volutions four, the outer one very large in proportion, and marked with two or three whitish transverse lines exhibiting the internal partitions; the upper surface very convex, with a deep umbilicus in the centre, the under side nearly flat, and umbilicate in the centre; the circumference slightly carinate: aperture oval, inclining to triangular, with the peritreme interrupted.

Except for its internal semiconcamerated partition, this shell exactly resembles the *Planorbis fontanus*.

In stagnant waters, on aquatic plants.

XXII. LIMNEUS.

Shell regular, spiral, oblong, thin and transparent, with a single oblique plait or fold in the middle of the pillar: aperture oblong, with the outer lip acute, rounded and entire at the base, the peritreme interrupted: operculum none.

† with the spire not so long as the aperture.

100. Limneus *auricularius*. Shell extremely inflated, striolate with a very short acute spire: aperture oblique, vastly expanded and roundish-oval.

Limneus auricularius. *Drap. p.* 49. *t.* 2. *f.* 28, 29, 32.
Lymnæa auricularia. *Lamarck*, vi. ii. *p.* 161.
Lymneus auricularius. *Brard, p.* 140. *t.* 5. *f.* 2, 3.
Radix auriculatus. *De Montfort*, ii. *p.* 207.
Gulnaria auricularia. *Leach, Mollusc. p.* 148.
Helix auricularia. *Mont. p.* 375. *t.* 16. *f.* 2.

b. regularly striate longitudinally.

Shell an inch long, and three quarters wide, thin, brittle, transparent, of a light yellow horn-colour, more or less distinctly striate longitudinally:

spire composed of four volutions, the three terminal ones very small: aperture vast somewhat oval, with the outer lip expanded; pillar with a strong fold, the lip reflected and forming a slight hollow behind it.

In stagnant and slow waters.

101. Limneus *pereger*. Shell ventricose, more or less striate, with a moderately short acute spire.

Limneus pereger. *Drap. p.* 50. *t.* 2. *f.* 34—37.
Lymnæa peregra. *Lamarck*, vi. ii. *p.* 161.
Gulnaria peregra. *Leach, Mollusc. p.* 146.
Helix peregra. *Mont. p.* 373. *t.* 16. *f.* 2.
Helix putris. *Turt. Dict. p.* 67.

b. with the aperture more dilated.

Limneus ovatus. *Drap. p.* 50. *t.* 2. *f.* 30, 31.
Lymneus ovatus. *Brard, p.* 142. *t.* 5. *f.* 4, 5.
Lymnæa ovata. *Lamarck*, vi. ii. *p.* 161.
Helix limosa. *Mont. p.* 381. *t.* 16. *f.* 1.

c. the shell thicker, and the outer lip not attenuated.

Helix lutea. *Mont. p.* 380. *t.* 16. *f.* 6.

d. with regular longitudinal grooves.

Gulnaria lacustris. *Leach, Mollusc. p.* 146.

e. with the outer lip much expanded, *Linn. Trans.* viii. *t.* 5. *f.* 8*.

Shell varying much in size, of a greyish or yellowish colour, and generally covered with a dark foul crust, more or less striate: spire moderately elongated, about a third part the length of the whole shell, with the lesser volutions not so abruptly disproportionate to the body one as in the last: aperture oval-oblong with the umbilicus sometimes obliterated.

All these varieties run so much into each other, that they can hardly be considered as specifically distinct. The grooved variety d. we have been able to trace in every degree of distinctness and strength of the striæ, a circumstance to which many of this family are subject, more especially in the *L. glutinosus* and *L. fossarius*.

102. Limneus *Scaturiginum*. Shell oblong, pellucid, smooth, with a short obtuse spire: aperture narrow oblong.

Physa Scaturiginum. *Drap. p.* 56. *t.* 3. *f.* 14, 15.

Shell not half a line long, extremely thin and brittle,

smooth, glossy, transparent, whitish horn-colour: spire oblique, short, obtuse, consisting of three, rarely four volutions, the primary one large in proportion to the rest, with the sutures well defined: aperture as long again as the spire, with a small white plait on the pillar: umbilicus none.

In the quiescent parts of rivers and in ponds, on the under side of the leaves of the Water Lily.

103. Limneus *glutinosus*. Shell semiglobular, extremely thin and inflated, amber-colour: spire with three scarcely produced volutions.

Limneus glutinosus. *Drap. p.* 50.
Limnea glutinosa. *Sowerby, Gen. f.* 5.
Myxas Mulleri. *Leach, Mollusc. p.* 149.
Helix glutinosa. *Mont. p.* 379. *t.* 16. *f.* 5.

Shell about half an inch in diameter, extremely thin and transparent, of an amber or yellowish horn-colour, somewhat orbicular, with the outer lip much expanded: spire consisting of three and a half volutions; the smaller one lying nearly flat on the larger one, marked by a deep suture, and ending obtusely; the larger volution regularly striate: pillar without umbilicus.

In stagnant ditches about Oxford.

†† with the spire as long or longer than the aperture.

104. Limneus *stagnalis*. Shell oval-oblong, with the lower volution much inflated, and somewhat angular; the suture deep.

Limneus stagnalis. *Drap. p.* 51. *t.* 2. *f.* 38, 39.
Lymneus stagnalis. *Brard, p.* 133. *t.* 5. *f.* 1.
Lymnus stagnalis. *De Montfort*, ii. *p.* 268.
Limnea stagnalis. *Sowerby, Gen. f.* 1.
Lymnæa stagnalis. *Lamarck*, vi. ii. *p.* 159.
Stagnicola vulgaris. *Leach, Mollusc. p.* 145.
Helix stagnalis. *Mont. p.* 367. *t.* 16. *f.* 8.

Shell an inch and a half long, and nearly an inch wide, thin and brittle, of a greyish-white colour, often covered with an extraneous coat: spire composed of six or seven volutions which are rounded and tumid, tapering to a fine point; the larger one striate longitudinally and generally crossed by raised transverse lines, giving it an angular appearance like cut glass: pillar with the fold very strong, forming a slight umbilicus, the lip white and spread.

In stagnant and slow waters.

105. Limneus *fragilis*. Shell narrow oblong, with

the volutions elegantly tapering, and hardly distinguished by the suture.

Stagnicola elegans. *Leach, Mollusc. p.* 144.
Bulimus fragilis. *Lamarck*, vi. ii. *p.* 123.
Helix fragilis. *Mont. p.* 368. *t.* 16. *f.* 7.

Shell about half the size of the last, thin and transparent; from which it differs, 1. in the regularly slender form, in consequence of the ultimate volution not being so large in proportion to the rest: 2. in the smaller volutions being nearly flat, and elegantly sloping to each other: 3. in the suture being more oblique: and 4. in the aperture being more taper and oblong, and shorter in proportion to the spire.

In stagnant waters and slow streams.

106. Limneus *elongatus*. Shell elongated, taper, with seven or eight convex volutions, and the aperture very short.

Limneus elongatus. *Drap. p.* 52. *t.* 3. *f.* 3, 4.
Limnea elongata. *Sowerby, Gen. f.* 6.
Lymnæa Leucostoma. *Lamarck*, vi. ii. *p.* 162.
Stagnicola octanfracta. *Leach, Mollusc. p.* 141.
Helix octanfracta. *Mont. p.* 396. *t.* 11. *f.* 8.

Helix peregrina. *Dillwyn, p.* 954.

Shell an inch long, regularly tapering, with the ultimate volution not larger in proportion than the rest: spire composed of seven or eight tumid volutions, on the larger of which are often a few transverse striæ, and all of them obscurely striate longitudinally: aperture narrow oval, not a third part as long as the spire, with the pillar spread and white, but not forming an umbilicus.

It varies in the convexity of the volutions, and their number, as we have them from different waters with from six to nine.

In stagnant waters, rather local.

107. Limneus *palustris.* Shell conic-oval, with six rather tumid volutions, the lower one somewhat angular by raised transverse and longitudinal striæ.

Limneus palustris. *Drap. p.* 52. *t.* 2. *f.* 40—42. and *t.* 3. *f.* 1, 2.
Lymneus palustris. *Brard, p.* 136. *t.* 5. *f.* 6, 7.
Lymnæa palustris. *Lamarck,* vi. ii. *p.* 160.
Stagnicola communis. *Leach, Mollusc. p.* 142.
Helix palustris. *Mont. p.* 373. *t.* 16. *f.* 10.

Shell three quarters of an inch long, brown horn-

colour rather opake, suddenly sloping in a conic manner, the volutions hardly raised, slightly striate longitudinally, and crossed with more remote transverse ones, like the facets of cut glass; aperture oval, covering nearly half the shell, often chocolate-brown and glossy in the inside, sometimes rosy about the pillar, where the peritreme is spread and glossy, forming a slight umbilicus.

In marshes and ponds.

108. Limnæus *fossarius*. Shell oblong-oval, with six or seven rounded and deeply divided volutions, striolate longitudinally and across.

Limneus minutus. *Drap. p. 53. t. 3. f. 5, 6.*
Lymneus minutus. *Brard, p. 138. t. 5. f. 8, 9.*
Lymnæa minuta. *Lamarck*, vi. ii. *p.* 162.
Stagnicola minuta. *Leach, Mollusc. p. 143.*
Helix fossaria. *Mont. p. 372. t. 16. f. 9.*

b. conic-oval, less glossy-brown and smooth. *Drap. p. 53. t. 3. f. 7.*

c. with regular longitudinal striæ.

d. with the lower volution flattened at top, in the centre of which are sunk the other volutions.

Shell half an inch long, pale brown or greyish, and is readily distinguished from the last by the rounded and deeply divided volutions: aperture nearly half as long as the shell; the outer lip a little reflected but not spread, nor glossy. The variety c. is very elegant.

In marshes and ditches.

†109. Limneus *detritus*. Shell oval, ventricose, glossy, slightly striate, white, with often from one to three obscure brown transverse bands.

Helix detrita. *Mont. tab.* 11. *f.* 1.

Shell three quarters of an inch long, and about half an inch broad, with five or six rather swollen volutions, white and transparent, the first of which is about equal to all the rest.

The shell from which the above description was drawn, was sold to us at Teignmouth as having been found in the pond of Sir James Nugent's garden. It has three brown transverse bands on the first volution, and the tip is brown. In size and figure it answers exactly to the *Helix Bontia* of Chemnitz, *vol.* ix. *p.* 156. *tab.* 134. *f.* 1216, 1217. except that the brown bands are not conti-

nued round the smaller volutions; and is certainly very different from the *Bulimus radiatus* of Draparnaud. We must therefore still consider this shell as a very doubtful native. What we had considered as this species in Ireland was a variety of *L. pereger*.

We have occasionally found an extremely minute shell of this Genus upon the leaves of the Water-flag. It is of a semiglobular form, pale straw-colour, with a flat and very obtuse spire consisting of a single volution. The animal is clear white, and very vivacious. Whether it is distinct, or the young of some other species, we have not had opportunities to ascertain.

XXIII. PHYSA.

Shell reversed, spiral, thin and transparent, oval or oblong: aperture lanceolate or dilated oval, with the peritreme interrupted: umbilicus none: operculum none.

110. Physa *fontinalis*. Shell horn-colour, oval, with a very short obtuse spire: aperture dilated at the base.

Physa fontinalis. *Drap. p.* 54. *t.* 3. *f.* 8, 9.
——————— *Brard, p.* 167. *t.* 7. *f.* 7, 8.
——————— *Lamarck*, vi. ii. 156. *Leach*, 150.
Limnea fontinalis. *Sowerby, Gen. f.* 8.
Bulla fontinalis. *Mont. p.* 226.
——————— *Linn. Trans.* viii. *p.* 126. *t.* 4. *f.* 1.

Shell nearly half an inch long, and half as much broad, very thin and fragile: spire extremely short, of four volutions, the lower one much inflated, the others small, and ending obtusely: aperture covering nearly the whole of the shell; pillar slightly sinuate and white, not reflected.

In rivers and streams, on aquatic plants.

111. Physa *alba*. Shell quite white, oval, inflated, with the volutions tumid and exserted: aperture roundish-oval.

Physa alba. *Zool. Journ.* i. *p.* 363. *t.* 13. *f.* 3.

Shell about the size of the last, but is quite white, with the volutions more tumid and oblique, and deeply defined by the suture: pillar spread, without flexure in the middle, but forming a longitudinal hollow behind it.

Found in the river Towyn in North Wales.

†112. Physa *rivalis*. Shell oval, horn-colour, with a rather prominent acute spire: aperture oval-oblong.

Bulla rivalis. *Linn. Trans.* viii. *p.* 126. *t.* 4. *f.* 2.

Shell larger than the *Physa fontinalis*, and differs in being exactly oval, with the spire prominent and acute.

Said to have been found in Hampshire by Mr. James Hay, but is a very doubtful shell.

113. Physa *Hypnorum*. Shell horn-colour, oblong.

with an elongate pointed spire: aperture oval-lanceolate.

Physa Hypnorum. *Drap. p. 55. t. 3. f.* 12, 13.
Limnea turrita. *Sowerby, Gen. f.* 10.
Bulla Hypnorum. *Mont. p. 228.*
Nauta Hypnorum. *Leach, Mollusc. p.* 152.

Shell half an inch long, and a third part as broad, dark horn-colour, glossy and transparent: spire composed of five or six produced and hardly raised volutions, ending rather acutely: aperture narrow-oval, covering about half the shell; the pillar a little sinuate, often of a pale rose-colour.

In ponds and slow streams.

PERISTOMADÆ.

Shell conic or flat: aperture circular, with the margin united all round, and furnished with an operculum.

24. Valvata. || 25. Paludina.

XXIV. VALVATA.

Shell with the spire a little elevated, or flat and disk-like: aperture quite circular, united all round, and furnished with an horny operculum marked with a single raised spiral line.

114. Valvata *obtusa*. Shell globular, with an elevated obtuse spire, and a deep central umbilicus.

Valvata obtusa. *Brard, p.* 190. *t.* 6. *f.* 17.
Cyclostoma obtusum. *Drap. p.* 33. *t.* 1. *f.* 14.
Turbo fontinalis. *Mont. p.* 348. *t.* 22. *f.* 4.
Turbo thermalis. *Dillwyn, p.* 852.

Shell nearly a quarter of an inch long and as much broad, globular, thin, light horn-colour, very finely striate longitudinally, and marked with some obscure circular lines: spire of four volutions, tumid and deeply defined, and having much the appearance of a *Trochus*, with a deep central umbilicus beneath: operculum dull greyish white, penetrating the mouth.

In canals and ponds, but not common.

115. Valvata *Spirorbis*. Shell slightly concave above, and umbilicate beneath.

Valvata Spirorbis. *Drap. p.* 41. *t.* 1. *f.* 32, 33.
——————— *Brard, p.* 187. *t.* 6. *f.* 15, 16.
Helix cristata. *Mont. p.* 46. *Vign.* 1. *f.* 7, 8.
Turbo cristatus. *Turton, Dict. p.* 227.

Shell about the tenth of an inch in diameter, pale horn-colour, striate transversely, with three volutions; the upper surface a little sunk: the under side umbilicate, so as to expose the interior volutions.

In ditches and canals, on aquatic plants.

116. Valvata *Planorbis.* Shell flat above, and deeply umbilicate beneath.

Valvata Planorbis. *Drap. p.* 41. *t.* 1. *f.* 34, 35.
——————— *Brard, p.* 186. *t.* 6. *f.* 18, 19.

Shell smaller than the last, from which it differs in being of a more transparent whiteness, and not being concave or sunk in the upper surface; the umbilicus is also narrower and deeper.

Found with the last, but more rarely.

117. Valvata *minuta.* Shell a little convex above, and umbilicate beneath.

Valvata minuta. *Drap. p.* 48. *t.* 1. *f.* 36—38.
Helix serpuloides. *Mont. Suppl.* 147. *t.* 21. *f.* 3.
Turbo serpuloides. *Turt. Dict. p.* 228.

Shell exceedingly minute, with two or two and a half volutions, very finely striate, a little convex on the upper surface, and deeply umbilicate beneath.

Very much allied to this species is the *Turbo depressus*, which we take from the marine rocks in Devonshire: but independently of the latter being a salt-water shell, the operculum is not spirally striate, and the animal wants the crested appendage in the middle of the head.

In ditches and marshes.

XXV. PALUDINA.

Shell conoid or oblong, covered with an epidermis: aperture roundish-oval, slightly angular at top, united all round: operculum roundish, with several nearly circular concentric striæ.

118. Paludina *vivipara*. Shell thin, oval, acute; volutions five, much inflated; with three brown bands: the sutures deeply impressed.

Paludina vivipara. *Brard, p.* 174. *t.* 7. *f.* 1.
Cyclostoma viviparum. *Drap. p.* 34. *t.* 1. *f.* 16, 17.
Viviparus Fluviorum. *De Montfort,* ii. *p.* 247.
Helix vivipara. *Linn. Mont. p.* 386.

Shell an inch and a quarter long, and an inch broad, thin, transparent, finely striate longitudinally, of an olive colour with three brown bands on the larger volution: spire composed of five inflated and deeply divided volutions, the first very large, the terminal one a mere point: aperture pear-shaped, a little produced at the upper angle; the inner lip a little reflected so as to half close the umbilicus.

In still waters and slow rivers.

119. Paludina *achatina*. Shell thin, conic-oval, acute; volutions six, tumid, with three reddish-brown bands; the sutures well defined.

Paludina achatina. *Lamarck*, vi. ii. *p.* 174.
Cyclostoma achatinum. *Drap. p.* 36. *t.* 1. *f.* 18.

Shell resembling the last, but is of a more oblong shape, with six volutions, which are not so much swollen, and consequently the sutures are not so deep.

Found with the last.

120. Paludina *impura*. Shell oval-oblong, yellowish horn-colour, smooth, semitransparent, with five flat volutions, and without umbilicus.

Paludina impura. *Lamarck*, vi. ii. *p.* 175.
———————— *Brard*, *p.* 183. *t.* 7. *f.* 2.
Cyclostoma impurum. *Drap. p.* 36. *t.* 1. *f.* 19.
Helix tentaculata. *Mont.* 389. *Turt. Dict.* 68.

b. shorter, less, and more conical, *Drap. t.* 1. *f.* 20.

Shell half an inch long, and three tenths wide, often covered with a blackish foul coat: spire composed of five volutions, the first very tumid, the others hardly raised: pillar without umbilicus.

In ditches and canals.

121. Paludina *similis*. Shell conic, yellowish horn-colour, smooth, semitransparent, with five very tumid volutions, and a small oblique umbilicus.

Cyclostoma simile. *Drap. p.* 31. *t.* 4. *f.* 15.
Turbo lævis. *Walker, fig.* 33.

Shell a quarter of an inch long, and two lines broad, with four or five very tumid volutions: aperture dilated, nearly circular, projecting more outwardly, or out of the line of the columnar axis, with a small umbilicus behind it.

The fry of this species are disposed on a tough strap-shaped green membrane, in a double row, consisting of six or seven pairs placed opposite to each other; and this elongated receptacle is fixed to the under surface of aquatic plants.

In ditches and canals.

122. Paludina *viridis*. Shell somewhat conic and obtuse, inflated, smooth, with four tumid volutions, and no umbilicus.

Cyclostoma viride. *Drap. p.* 37. *t.* 1. *f.* 26, 27.

Shell two tenths of an inch long, and half as much broad, greenish horn-colour: spire composed of

four volutions, which are more swollen than those of the *P. impura*, but not so much as those of the *P. similis*, and the tip is more obtuse : aperture dilated and projecting forwards, without umbilicus.

The inhabitant is of a deep green colour, imparting a blackish-green shade to the shell when filled with it.

In ditches and canals.

123. Paludina *Stagnorum*. Shell oblong, horn-colour, rather acute, smooth, with five slightly raised volutions : aperture oval, with a small umbilicus.

Cyclostoma acutum. *Drap. p.* 40. *t.* 1. *f.* 23.
Helix stagnalis. *Linn. Syst. p.* 1248.
Helix Stagnorum. *Gmelin, p.* 3653.

Shell the eighth of an inch long, and a third part as broad, pale greenish horn-colour, rather elongated and taper, and ending rather acutely ; the primary volution not proportionately larger than the rest : aperture exactly oval, in nearly a straight line with the spire, with a small perforation behind it.

It appears to us that this is the hitherto obscure species of Linné, who by an oversight had given to two distinct species the name of *Helix stagnalis*.

With his description our shell most accurately corresponds in every particular. "Shell smaller than a barley-corn, oval oblong and rather acute, with a small umbilicus, and the aperture margined." By the term margined, as applied to the aperture, it is here meant, as in some other places, that the margin is continued all round, and not interrupted by the convexity of the penultimate volution.

In ditches and canals, but very rarely.

NERITIDÆ.

Shell semiglobular or semioval, flat underneath, without umbilicus: aperture half divided transversely, and furnished with an operculum.

XXVI. NERITINA.

Shell solid, semiglobular or semioval, flat underneath, with a very short lateral spire: aperture entire, semicircular or semielliptic, with an operculum; pillar sharp-edged, placed transversely in a straight line, without teeth: umbilicus none.

This Genus has been separated from the *Nerita*, the species of which are all marine, with the pillar placed more obliquely; and from the *Natica*, also a marine tribe, furnished with an umbilicus.

124. Neritina *fluviatilis*. Shell convex, dilated, tessellate with variously coloured spots.

Neritina fluviatilis. *Lamarck*, vi. ii. *p.* 188.

Nerita fluviatilis. *Drap. p.* 31. *t.* 1. *f.* 1—4.
——————— *Brard, p.* 194. *t.* 7. *f.* 9, 10, 12.
——————— *Mont. p.* 470. *Turt. Dict.* 127.
Theodoxus Lutetianus. *De Montfort*, ii. *p.* 351.

Shell about three eighths of an inch long, and two broad, convex above and flat underneath, obscurely striate transversely, of a greenish or whitish colour, variously checquered with spots or bands of white, brown, purple or pink: spire consisting of three volutions, the first very large oblong and oblique, the others small and lateral: aperture horizontal, semielliptic, with the margin sharp and entire; pillar white, transverse, sloping down to a sharp edge, and quite entire: operculum semilunar, yellowish with an orange border, and underneath is a strong raised grooved spine at one end. The shell is often covered with foul incrustations.

In slow rivers adhering to stones.

PATELLIDÆ.

Shell concave underneath, without regular spire, enveloping a conic animal.

XXVII. ANCYLUS.

Shell thin, concave underneath, elevated into an oblique cone, without regular spire or pillar; the point rather acute, and inflected posteriorly: aperture oval or oblong, very entire at the margin, and without operculum: muscular impression suborbicular, and emarginate anteriorly.

Separated from the *Patella*, which is a marine shell, and generally furnished with one or more volutions at the point of the cone; and whose apex or point turns anteriorly.

125. Ancylus *fluviatilis*. Shell conoid, with the point recurved and near one end: aperture roundish-oval.

Ancylus fluviatilis. *Drap. p.* 48. *t.* 2. *f.* 23, 24.
——————— *Brard, p.* 200. *t.* 7. *f.* 3.
——————— *Sowerby, Gen. fig.* 1.
Patella fluviatilis. *Mont. p.* 482.
Patella lacustris. *Turt. Dict. p.* 138.

b. with slight longitudinal striæ.

Shell about a quarter of an inch in diameter, and nearly as much in height, semitransparent, light horn-colour, covered with a dusky green skin, slightly marked with concentric striæ, inside blueish-white, glossy: the crown slightly curved downwards.

In streams and rivulets, attached to stones.

126. Ancylus *lacustris*. Shell oblong, compressed, with the point slightly recurved in an oblique direction and nearly central.

Ancylus lacustris. *Drap. p.* 47. *t.* 2. *f.* 25—27.
——————— *Sowerby, Gen. f.* 2.
Patella lacustris. *Montagu, p.* 484.
Patella oblonga. *Turt. Dict. p.* 138.

Shell a quarter of an inch long, and hardly a tenth in breadth, extremely thin and transparent, smooth,

oblong, compressed at the sides, with the apex pointed and near the centre of the shell, inclining towards the narrower end, and turning a little obliquely towards one side.

In still waters attached to aquatic plants.

Helix brevipes, we have reason to think, with Mr. Jeffries, is but the young of a species of *Vitrina*, as the umbilicus is not sufficiently open.

Bulimus tuberculatus. Captain Blomer has surely been mistaken in sending us this species as British. M. De Férussac, to whose inspection it has been submitted, affirms, that it has never been found within fifteen degrees of Britain.

ERRATA.

p. 96, last line: for *ead* read *dead*.

p. 114, line 6 from bottom, for *also* read *else*.

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ACHATINA. SUCCINEA.

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NERITINA. ANCYLUS.

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OF

ENGLISH NAMES.

In the appropriation of English names to subjects now first brought forward under a new classification, it will be impossible exactly to follow the arrangement adopted in the Conchological Dictionary of the author. So far, however, as they can be made to coincide, care has not been neglected to make them interchangeably intelligible.

The Roman Capitals refer to the Genera, and the smaller numerals to the numbers in the work, and in the Plates.

I. CÝCLAS. *CYCLE.*

So called from the more or less rounded circumference of the whole family.

1. Cyclas rivicola. *River Cycle.*
2. Cyclas cornea. *Horny Cycle.*
3. Cyclas calyculata. *Capped Cycle.*
4. Cyclas lacustris. *Lake Cycle.*
5. Cyclas amnica. *Rivulet Cycle.*
6. Cyclas appendiculata. *Appendaged Cycle.*
7. Cyclas pusilla. *Minute Cycle.*

II. ÁNODON. *FRESH-WATER MUSSEL.*

So called from the want of teeth to unite the two hinges.

8. Anodon cygneus. *Swan Fresh-water Mussel.*

III. ÚNIO. *UNION.*

So named from being the shell in which the fresh-water Pearls, or Unions, are formed.

9. Unio margaritiferus. *Fresh-water Pearl Mussel.*

IV. MÝSCA. *RIVER MUSSEL.*

An ancient name given to a fresh-water Mussel shell.

10. Mysca Batava. *Dutch River Mussel.*
11. Mysca Pictorum. *Painter's Mussel.*
12. Mysca ovata. *Oval River Mussel.*
13. Mysca solida. *Solid River Mussel.*

V. LIMACÉLLUS. *SHELL-SLUG.*

So named from the slug which bears a shell internally.

14. Limacellus Parma. *Shield Shell-slug.*
15. Limacellus Unguiculus. *Nail Shell-slug.*
16. Limacellus variegatus. *Variegated Shell-slug.*
17. Limacellus obliquus. *Oblique Shell-slug.*

VI. TESTACÉLLUS. *SLUG-SHELL.*

So named from the slug which is furnished with an external shell.

18. Testacellus Maugei. *Teneriffe Slug-shell.*
19. Testacellus Scutulum. *Shield Slug-shell.*
20. Testacellus haliotideus. *Ear-shaped Slug-shell.*

VII. VITRÍNA. *GLASS BUBBLE.*

So called from its extremely thin consistence, and watery-green appearance.

21. Vitrina pellucida. *Transparent Glass Bubble.*
22. Vitrina elongata. *Elongated Glass Bubble.*

VIII. HÉLIX. *SNAIL-SHELL.*

So named from the spiral twist of the volutions.

23. Helix nemoralis. *Girdled Snail-shell.*
24. Helix hortensis. *Garden Snail-shell.*
25. Helix Arbustorum. *Shrub Snail-shell.*
26. Helix Carthusiana. *Kentish Snail-shell.*
27. Helix Carthusianella. *Chalk Snail-shell.*
28. Helix rufescens. *Rufous Snail-shell.*
29. Helix sericea. *Silky Snail-shell.*
30. Helix cingenda. *Banded Snail-shell.*
31. Helix virgata. *Zoned Snail-shell.*
32. Helix caperata. *Black-tipped Snail-shell.*
33. Helix spinulosa. *Prickly Snail-shell.*
34. Helix Pomatia. *Edible Snail-shell.*
35. Helix aspersa. *Common Snail-shell.*
36. Helix fusca. *Brown Snail-shell.*
37. Helix Ericetorum. *Heath Snail-shell.*
38. Helix nitens. *Glossy Snail-shell.*

39. Helix alliaria. *Garlic Snail-shell.*
40. Helix lucida. *Lucid Snail-shell.*
41. Helix hispida. *Bristly Snail-shell.*
42. Helix crystallina. *Crystalline Snail-shell.*
43. Helix pura. *Clear Snail-shell.*
44. Helix radiata. *Radiated Snail-shell.*
45. Helix rupestris. *Open Snail-shell.*
46. Helix pygmæa. *Pigmy Snail-shell.*
47. Helix fulva. *Top-shaped Snail-shell.*
48. Helix Scarburgensis. *Scarborough Snail-shell.*
49. Helix pulchella. *White Snail-shell.*
50. Helix brevipes. *Short-foot Snail-shell.*

IX. CÁROCOLLA. *ROCK-SHELL.*

So called from the tenacity with which it adheres to the interstices of limestone rocks, the surface of which it is supposed to corrode, and was therefore denominated *Lapicida* by Linné.

51. Carocolla Lapicida. *Variegated Rock-shell.*

X. AZÉCA. *TRIDENT-SHELL.*

A name arbitrarily adopted by Dr. Leach.

52. Azeca Matoni. *Glossy Trident-shell.*

XI. CLAUSÍLIA. *CLOSE-SHELL.*

So called because the aperture is closed internally by a spiral lid.

53. Clausilia laminata. *Laminated Close-shell.*
54. Clausilia plicatula. *Plaited Close-shell.*
55. Clausilia biplicata. *Folded Close-shell.*
56. Clausilia bidens. *Bident Close-shell.*
57. Clausilia labiata. *White-lipped Close-shell.*
58. Clausilia rugosa. *Dark Close-shell.*
59. Clausilia parvula. *Smaller Close-shell.*

XII. BÚLIMUS. *TWIST-SHELL.*

Probably so named from their eagerness to feed on vegetable substances.

60. Bulimus decollatus. *Truncated Twist-shell.*
61. Bulimus Clavulus. *Spike Twist-shell.*
62. Bulimus montanus. *Wiltshire Twist-shell.*
63. Bulimus obscurus. *Dusky Twist-shell.*
64. Bulimus tuberculatus. *Tubercled Twist-shell.*
65. Bulimus lubricus. *Varnished Twist-shell.*
66. Bulimus lineatus. *Lineated Twist-shell.*
67. Bulimus fasciatus. *Banded Twist-shell.*
68. Bulimus articulatus. *Chain Twist-shell.*
69. Bulimus ventricosus. *Inflated Twist-shell.*

XIII. BALÆA. *MOSS-SHELL.*

An arbitrary name given by Dr. Leach.

70. Balæa fragilis. *Fragile Moss-shell.*

XIV. ACHATÍNA. *AGATE-SHELL.*

So named from the Agate-like stripes which ornament all the foreign species.

71. Achatina Acicula. *Needle Agate-shell.*
72. Achatina octona. *Taper Agate-shell.*

XV. SUCCÍNEA. *AMBER-SHELL.*

So called from the transparent amber colour.

73. Succinea amphibia. *Common Amber-shell.*
74. Succinea oblonga. *Oblong Amber-shell.*

XVI. CÝCLOSTOMA. *CIRCLE-SHELL.*

So named from the circular circumference of the aperture or mouth.

75. Cyclostoma elegans. *Elegant Circle-shell.*
76. Cyclostoma productum. *Produced Circle-shell.*

XVII. CARÝCHIUM. *SEDGE-SHELL.*

So called from its habitat among wet leaves, grass, and other moist matters.

77. Carychium minimum. *Minute Sedge-shell.*

XVIII. PÚPA. *CHRYSALIS-SHELL.*

So called from the resemblance to the Pupa or Chrysalis of an insect.

78. Pupa umbilicata. *Umbilicate Chrysalis-shell.*
79. Pupa marginata. *Margined Chrysalis-shell.*
80. Pupa edentula. *Toothless Chrysalis-shell.*

XIX. VERTÍGO. *WHIRL-SHELL.*

So named from the abrupt twist of the volutions.

81. Vertigo Secale. *Juniper Whirl-shell.*
82. Vertigo Anglica. *English Whirl-shell.*
83. Vertigo pygmæa. *Pigmy Whirl-shell.*
84. Vertigo sexdentata. *Six-toothed Whirl-shell.*
85. Vertigo palustris. *Marsh Whirl-shell.*
86. Vertigo heterostropha. *Wry-mouth Whirl-shell.*

XX. PLANÓRBIS. *COIL-SHELL.*

So named from the flattened and horizontal coil of the volutions, by means of which the whole of the gyrations may be seen on each of the sides.

87. Planorbis carinatus. *Carinated Coil-shell.*
88. Planorbis marginatus. *Margined Coil-shell.*
89. Planorbis complanatus. *Flattened Coil-shell.*
90. Planorbis rhombeus. *Rhombic Coil-shell.*
91. Planorbis Vortex. *Wheel Coil-shell.*
92. Planorbis planatus. *Edged Coil-shell.*
93. Planorbis fontanus. *Fountain Coil-shell.*
94. Planorbis imbricatus. *Nautilus Coil-shell.*
95. Planorbis corneus. *Horn Coil-shell.*
96. Planorbis contortus. *Twisted Coil-shell.*
97. Planorbis albus. *White Coil-shell.*
98. Planorbis Spirorbis. *Rolled Coil-shell.*

XXI. SEGMENTÍNA. *SEGMENT-SHELL.*

So called from the internal segments or partitions.

99. Segmentina nitida. *Glossy Segment-shell.*

XXII. LÍMNEUS. *MUD-SHELL.*

So named from their general location in ponds, ditches, and other stagnant receptacles.

100. Limneus auricularius. *Wide-mouth Mud-shell.*
101. Limneus pereger. *Puddle Mud-shell.*
102. Limneus Scaturiginum. *Brook Mud-shell.*
103. Limneus glutinosus. *Glutinous Mud-shell.*
104. Limneus stagnalis. *Lake Mud-shell.*
105. Limneus fragilis. *Brittle Mud-shell.*
106. Limneus elongatus. *Eight-whirled Mud-shell.*
107. Limneus palustris. *Marsh Mud-shell.*
108. Limneus fossarius. *Ditch Mud-shell.*
109. Limneus detritus. *Worn Mud-shell.*

XXIII. PHÝSA. *BUBBLE-SHELL.*

So called from the thin and inflated appearance.

110. Physa fontinalis. *Stream Bubble-shell.*
111. Physa alba. *White Bubble-shell.*
112. Physa rivalis. *River Bubble-shell.*
113. Physa Hypnorum. *Slender Bubble-shell.*

XXIV. VALVÁTA. *VALVE-SHELL.*

So named from the valve or lid which covers the orifice of the aperture.

114. Valvata obtusa. *Stream Valve-shell.*
115. Valvata Spirorbis. *Crested Valve-shell.*
116. Valvata Planorbis. *Depressed Valve-shell.*
117. Valvata minuta. *Flat Valve-shell.*

XXV. PALUDÍNA. *MARSH-SHELL*

So named from their locality in marshes, ditches, and slow streams.

118. Paludina vivipara. *Viviparous Marsh-shell.*
119. Paludina achatina. *Agate Marsh-shell.*
120. Paludina impura. *Covered Marsh-shell.*
121. Paludina similis. *Similar Marsh-shell.*
122. Paludina viridis. *Green Marsh-shell.*
123. Paludina Stagnorum. *Stagnant Marsh-shell.*

XXVI. NERITÍNA. *FRESH-WATER NERITE.*

A diminutive of Nerita, the ancient name of a sea shell.

124. Neritina fluviatilis. *River Neritine.*

XXVII. ÁNCYLUS. *FRESH-WATER PATELLA.*

So called from the close connexion by which the circumference of the shell is fixed to its attachment; or perhaps from the conical point, resembling the handle of a cover; in which case it should be written *Ansulus* or *Ansylus*.

125. Ancylus fluviatilis. *River Patella.*
126. Ancylus lacustris. *Lake Patella.*

The Author is here desirous to make an observation concerning names. When he called the shell discriminated by his daughter, *Turbo Turtonis*, it was loudly proclaimed that he had forgotten his Grammar; for that all names ending in *on* should pass through the Roman terminations of *us* and *i*. And that this supposed error should be fully and publicly corrected, Mr. Sowerby has thought it proper to denominate the new Genus, *Galeomma Turtoni*. These things are, however, usually arbitrary, as the learned Selden has dedicated his Carmen protrepticon, *Ad Ben. Jonsonium*: and the only rule in grammar by which

we can be guided is, that all names ending in *on*, as Solon, Chiron, Damon, Machaon, Ladon, shall have the inflexion of *onis*. The Author, therefore, can see no reason why his name should pass through the dilution of a Roman inflexion. And in this view he is supported by the noble and highly classical Byron, who has called his beautiful Latin effusion by the name of Poema Byronis.

1433

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